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ABSTRACT

The 49 papers in these two volumes were prepared to assist the Commission on Workforce Quality and Labor Market Efficiency in making recommendations for improving the U.S. work force. The papers summarize existing research and make recommendations on subjects reflecting seven Commission tasks: (1) examine the roles and effectiveness of privately and publicly provided job training and education; (2) determine the best mechanisms to keep education and training providers informed of changing skill needs; (3) consider the problem of financing private investments in human capital and the best ways to access financial capital markets; (4) assess the appropriate roles of employers, unions, and government in retraining and relocating dislocated workers; (5) examine ways in which private and public job placement agencies can enhance the efficiency of the changing labor market; (6) assess the need for greater flexibility in employment policies to facilitate work force entry; and (7) evaluate effects on productivity of such alternatives as innovative pay and benefit structures, employment security provisions, and worker involvement. Representative topics include new technology in the workplace; black male youth employment; unemployment insurance; labor force participation of older workers, young men, the economically disadvantaged, dual-earner couples, single parents, and women; family-work issues; and part-time and temporary work. (SK)

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INVESTING IN PEOPLE

A Strategy to Address America's Workforce Crisis

Background Papers
Vol. I
Vol. II

Commission on Workforce Quality
and Labor Market Efficiency

U.S. Department of Labor

Washington, D.C.
September 1989

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PREFACE

The Commission on Workforce Quality and Labor Market Efficiency was created on July 11, 1989, by the Secretary of Labor, the Honorable Ann McLaughlin. The Commission was charged with the task of making specific recommendations for the Department of Labor and the nation to increase the excellence of the American workforce. In particular, the Commission was given the following direct responsibilities:

1. Examine the roles and effectiveness of privately and publicly provided job training and education.
2. Determine the best mechanisms to keep the education system and training providers continuously informed of the changing skill needs of employers and workers.
3. Consider the problem of financing private investments in human capital and determine the best ways to access financial capital markets for that purpose.
4. Assess the appropriate roles of employers, unions, and government in retraining and relocating dislocated workers.
5. Examine ways in which private and public job placement agencies can enhance the efficiency of the changing labor market of the future.
6. Assess the need for greater flexibility of employers' policies to facilitate labor force entry.
7. Evaluate the opportunities to enhance productivity through alterations of the employment arrangement such as innovative pay systems and benefit structures, employment security provisions, and worker involvement.

As a first step toward carrying out these responsibilities, a broad range of background papers was commissioned through a competitive solicitation. These papers, along with three others written by Commission staff members, are included here.

The authors were requested to summarize existing research and to suggest specific recommendations for the Commission's consideration. The Commission's final report, *Investing in People: A Strategy to Address America's Workforce Crisis,* does in fact contain many recommendations that were originally suggested in the papers. The report was presented to the Honorable Elizabeth Dole on Labor Day 1989.

While the Commission's report draws heavily on these background papers, it is important to note that the authors are solely responsible for the facts reported and the opinions expressed. These papers should not be interpreted as reflecting the official positions of either the Department of Labor or the Commission on Workforce Quality and Labor Market Efficiency.

Finally, we would like to note our gratitude to these authors for the high quality and timeliness of their work.

David L. Crawford, Executive Director
Laurie J. Bassi, Deputy Director

Commission on Workforce Quality
and Labor Market Efficiency

U.S. Department of Labor
Washington, DC
September 1989

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INVESTING IN PEOPLE

A Strategy to Address America's Workforce Crisis

Background Papers Vol. I

Commission on Workforce Quality
and Labor Market Efficiency

U.S. Department of Labor
Washington, D.C.
September 1989

1. INCENTIVES FOR LEARNING: WHY AMERICAN HIGH SCHOOL STUDENTS COMPARE SO POORLY TO THEIR COUNTERPARTS OVERSEAS

John Bishop

Cornell University

The research that has culminated in this paper was sponsored by the Center for Advanced Human Resource Studies, the National Center for Research in Vocational Education and the Commission on Testing and Public Policy. I would like to thank Peter Mueser, Richard Murnane and James Rosenbaum for helpful comments on earlier versions of the paper. This paper has not undergone formal review or approval of the faculty of the ILR school. It is intended to make results of Center research available to others interested in human resource management in preliminary form to encourage discussion and suggestions.

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1. INCENTIVES FOR LEARNING: WHY AMERICAN HIGH SCHOOL STUDENTS COMPARE SO POORLY TO THEIR COUNTERPARTS OVERSEAS

John H. Bishop
Cornell University

The scientific and mathematical competence of American high school students is generally recognized to be very low. The National Assessment of Educational Progress (NAEP) reports that only 7.5 percent of 17 year old students can "integrate specialized scientific information" (NAEP 1989 p. 56) and 6.4 percent "demonstrated the capacity to apply mathematical operations in a variety of problem settings." (NAEP 1988b p. 42)

There is a large gap between the science and math competence of young Americans and their counterparts overseas. In the 1960s, the low ranking of American high school students in such comparisons was attributed to the fact that the test was administered to a larger proportion of American than European and Japanese youth. This is no longer the case. Figures 1 to 4 plot the scores in Algebra, Biology, Chemistry and Physics against proportion of the 18-year old population in the types of courses to which the international test was administered. In the Second International Math Study, the universe from which the American sample was drawn consisted of high school seniors taking a college preparatory math course. This group represents 13 percent of the age cohort, a proportion that is roughly comparable to the 12 percent of Japanese youth who were in their sample frame and is considerably smaller than the 19 percent of youth in the Canadian province of Ontario and the 50 percent of Hungarians who took the test.

In Algebra, the mean score for this very select group of American students was about equal to the mean score of the much larger group of Hungarians and substantially below the Canadian achievement level (McKnight et al., 1987).

The findings of the Second International Science Study are even more dismal. For example, the 25 percent of Canadian 18-year olds taking chemistry know just as much chemistry as the very select 1 percent of Americans high school seniors taking their second chemistry course (most of whom are in "Advanced Placement"). The 28 percent taking biology know much more than the 6 percent of American 17-18 year olds who are taking their second biology course (International Association for the Evaluation of Educational Achievement, 1988).

The poor performance of American students is sometimes blamed on the nation's "diversity". Many affluent parents apparently believe that their children are doing acceptably by international standards. This is not the case. In Stevenson, Lee and Stigler's (1986) study of 5th grade math achievement, the best of the 20 classrooms sampled in Minneapolis was outstripped by every single classroom studied in Sendai, Japan and by 19 of the 20 classrooms studied in Taipei, Taiwan. The nation's top high school students rank far behind much less elite samples of students in other countries. In math and science the gap between Japanese high school students and their white American counterparts is more than twice the size of the two to three grade level equivalent gap between blacks and whites in the U.S. The learning deficit is pervasive.

The costs in terms of competitiveness and living standards of these educational deficits is very large. Bishop (1989) applied a growth accounting methodology to a related issue -- the cost of the test score decline -- and using conservative assumptions calculated the resulting reduction in Gross National Product (GNP) to be $86 billion in 1987 projected in real terms to double by the year 2000. The test score decline between 1967 and 1980 was only 1.25 grade level equivalents on average across all academic subjects; the deficit with respect to Japan in math and science (the only two subjects for which there are recent international comparisons) is more than 4 U.S. grade level equivalents at the end of high school. Analysis of the National Longitudinal Study (NLS) Youth Cohort data on wages and earnings and General Achievement Test Battery (GATB) revalidation data and military data on the association between tests and job performance has found that mathematical competencies are better predictors of job performance and wages than verbal competencies in the great bulk of blue collar and clerical jobs (Bishop 1987b, 1988b). If this is the case and the deficit is not substantially made up in college, extrapolations from the test score decline study would imply that the educational deficit could on its own produce a productivity differential between Japan and the United States of more than 10 percent.

This paper examines the causes of this learning deficit and then recommends policy measures for remedying the problems identified. Section 1 presents evidence that American students devote considerably less time and energy to learning in high school than their counterparts abroad. Section 2 attributes the differences in learning effort to differences across societies in the structure and magnitude of the rewards for academic achievement. It is demonstrated that the U.S.

labor market under-rewards learning achievements in high school and that the failure to signal learning achievements to employers is at the root of the American learning deficit. Section 3 examines the consequences for incentives to learn and the sorting of workers to jobs of the signals that employers base their hiring selections on. Section 4 sets forth a series of policy recommendations designed to improve student incentives to devote time and energy to learning and to strengthen parental incentives to demand that local schools be upgraded. Section 5 discusses the likely impact of these reforms on the employment prospects of under-represented minorities. It is argued that the learning response will be particularly large among minority youth, that improved signaling of academic achievement will stimulate an increase in affirmative action recruiting and minority youth will for the first time be able to compete for attractive primary labor market jobs on the basis of their achievements in high school.

I. APATHY: THE PROXIMATE CAUSE OF THE LEARNING DEFICIT

American high school students do poorly in these international comparisons primarily because they devote a lot less time and energy to the task of learning. American students average nearly 20 absences a year; Japanese students only 3 a year (Berlin and Sum 1988). School years are longer in Europe and Japan. Forty-five percent of Japanese junior high school students attend Juku, private schools which provide tutoring in academic subjects (Leestma 1987). Thomas Rohlen has estimated that Japanese high school graduates average the equivalent of four more years in a classroom and studying than American graduates.

Studies of time use and time-on-task show that American students actively engage in a learning activity for only about half the time they are in high school. A study of schools in Chicago found that public schools with high-achieving students averaged about 75 percent of class time for actual instruction; for schools with low achieving students, the average was 51 percent of class time (Frederick, 1977). Other studies have found that for reading and math instruction the average engagement rate is about 75 percent (Fischer et al., 1978; Goodlad, 1983; Klein, Tyle, and Wright, 1979). Overall, Frederick, Walberg and Rasher (1979) estimated 46.5 percent of the potential learning time was lost due to absence, lateness, and inattention.

In the High School and Beyond Survey students reported spending an average of 3.5 hours per week on homework. When homework is added to engaged time at school, the total time devoted to study, instruction, and practice is only 18-22 hours per week -- between 15 and 20 percent of the student's waking hours during the school year. By way of comparison, the typical senior spent 10 hours per week in a part-time job and about 24 hours per week watching television (A. C. Neilsen unpublished data). Thus, TV occupies as much time as learning. Students in other nations spend much less time watching TV: 60 percent less in Switzerland and 44 percent less in Canada (Organization of Economic Cooperation and Development, Table 18.1, 1986). Japanese 5th graders spend 32.6 hours a week involved in academic activities while American youngsters devote only 19.6 hours to their studies (Stevenson, Lee and Stigler 1986). Science and mathematics deficits are particularly severe because most students do not take rigorous college preparatory courses in these subjects. The high school graduating class of 1982 took an average of only .43 credits of Algebra II, .31 credits of more advanced mathematics courses, .40 credits of chemistry and .19 credits of physics (Meyer 1988 Table A.2).

Even more important than the time devoted to learning is the intensity of the student's involvement in the process. At the completion of his study of American high schools, Theodore Sizer (1984) characterized students as, **"All too often docile, compliant, and without initiative**.(p. 54)" John Goodlad (1983) described: **"a general picture of considerable passivity among students**...(p. 113)". The high school teachers surveyed by Goodlad ranked "lack of student interest" and "lack of parental interest" as the two most important problems in education.

The student's lack of interest makes it difficult for teachers to be demanding. Sizer's description of Ms. Shiffe's class, illustrates what sometimes happens:

> Even while the names of living things poured out of Shiffe's lecture, no one was taking notes. She wanted the students to know these names. They did not want to know them and were not going to learn them. Apparently no outside threat--flunking, for example--affected the students. Shiffe did her thing, the students chattered on, even in the presence of a visitor....Their common front of uninterest probably made examinations moot. Shiffe could not flunk them all, and, if their performance was uniformly shoddy, she would have to pass them all. Her desperation was as obvious as the students cruelty toward her.(p. 157-158)

How does a teacher avoid this treatment? Sizer's description of Mr. Brody's class provides one example.

> He signaled to the students what the minima, the few questions for a test, were; all tenth and eleventh-graders could master these with absurdly little difficulty. The youngsters picked up the signal and kept their part of the bargain by being friendly and orderly. They did not push Brody, and he did not push them. The classroom was tranquil and bland. By my watch, over a third of the time was spent on matters other than history, and two-thirds

> of the classes ostensibly devoted to the subject were undemanding. Brody and his class had agreement, all right, agreement that reduced the efforts of both students and teacher to an irreducible and pathetic minimum.(p. 156)

Some teachers are able to overcome the obstacles and induce their students to undertake tough learning tasks. But for most, the student's lassitude is demoralizing. Everyone in the system recognizes the problem, but each group fixes blame on someone else. As one of my students put it:

> As it stands now, there is an unending, ever increasing cyclic problem. Teacher and administrator disinterest, apathy, and their lack of dedication results in students becoming even more unmotivated and docile, which in turn allows teachers to be less interested and dedicated. If students don't care, why should teachers? If teachers don't care, why should the students? (Krista, 1987)

Yes, it is a classic chicken versus egg problem. Teachers are assigned responsibility for setting high standards but we do not give them any of the tools that might be effective for inducing student observance of the academic goals of the classroom. They finally must rely on the force of their own personalities. All too often teachers compromise academic demands because the bulk of the class sees no need to accept them as reasonable and legitimate.

The Apathy of Parents and School Boards

The second major reason for the low levels of achievement by American students is parental and school board apathy. Japanese families allocate 10 percent of the family's income to educational expenses; American families only 2 percent. If American parents were truly dissatisfied with the performance of their local public schools, they would send their children to tuition financed schools offering an enriched and rigorous curriculum and tutoring after school would be as common as it is in Japan. Most parents who send their children to private schools appear to be attracted by their stricter discipline and religious education not more rigorous academics and better qualified teachers. Private school students do not learn at an appreciably faster rate than public school students (Cain and Goldberger 1983).

A comparative study of primary education in Taiwan, Japan and United States found that **even though American children are far behind Taiwanese and Japanese children in mathematics capability, American mothers are much more pleased with the performance of their local schools than Taiwanese and Japanese mothers.** When asked "How good a job would you say ___'s school is doing this year educating___", 91 percent of American mothers responded "excellent" or "good" while only 42 percent of Taiwanese and 39 percent of Japanese parents were this positive (Stevenson 1983). Clearly, American parents hold their children and their schools to lower academic standards than Japanese and Taiwanese -- as well as European -- parents.

II. INCENTIVES: THE REAL CAUSE OF THE LEARNING DEFICIT

Incentives for Effort and Learning in High School

The fundamental cause of student and parental apathy is the absence of good signals of effort and learning in high school and a consequent lack of rewards for effort and learning. Signals of learning like years of schooling are handsomely rewarded. In 1987 25 to 34 year old male (female) college graduates working full time full year earned

41 (48) percent more than comparable high school graduates and high school graduates earned 21 (23) percent more than high school dropouts. Schooling also reduces the risk of unemployment. These rewards have significant effects on student enrollment decisions. When the payoff to a college degree for white males fell in the early 1970s, the college attendance rates of white males fell substantially (Freeman 1976b). When the payoff to college rose again during the late 1970s and 1980s, male college attendance rates rose as well. Years of schooling is only a partial measure of learning accomplishment, however.

In contrast to years spent in school, the effort devoted to learning in high school and the actual competencies developed in high school are generally not well signaled to colleges and employers. Consequently, while students are generously rewarded for staying in school, the students who do not aspire to attend selective colleges benefit very little from working hard while in high school. The lack of incentives for effort and learning accomplishment is a consequence of three phenomena:

* The labor market fails to reward effort and achievement in high school.

* The peer group actively discourages academic effort.

* Admission to selective colleges is not based on an absolute or external standard of achievement in high school subjects. It is based instead on aptitude tests which do not assess the high school curriculum and on such measures of student performance such as class rank and grade point averages, which are defined relative to classmates' performances not relative to an external standard.

2.1 The Absence of Major Economic Rewards for Effort in High School

Students who plan to look for a job immediately after high school typically spend less time on their studies than those who plan to attend college. In large part, most see very little connection between how much they learn and their future success in the labor market. Less than a quarter of 10th graders believe that geometry, trigonometry, biology, chemistry and physics are needed to qualify for their first choice occupation (NLS, 1988). Statistical studies of the youth labor market confirm their skepticism about the benefits of taking tough courses and studying hard:

- Employers rank "reading, writing, math and reasoning ability" number 5 on a list of 6 abilities they look for when hiring (Survey of the National Federation of Independent Business [NFIB] membership).[2]
- For students seeking part-time employment while attending high school, grades and performance on academic achievement/aptitude tests have essentially no impact on labor market success. They have -
  - -- no effect on the chances of finding work when one is seeking it during high school, and
  - -- no effect on the wage rate of the jobs obtained while in high school (Hotchkiss, Bishop & Gardner, 1982).
- As one can see in Table 1, for those who do not go to college full-time, high school grades and test scores had -
  - -- no effect on the wage rate of the jobs obtained immediately after high school in Kang and Bishop's (1984) analysis of High School and Beyond seniors and only a 1 to 4.7 percent increase in wages per standard deviation improvement in test scores and grade point average in Meyer's (1982) analysis of Class of 1972 data.
  - -- a moderate effect on wage rates and earnings after 4 or 5 years [Gardner (1982) found an effect of 4.8 percent per standard deviation of achievement and Meyer (1982) found an effect of 4.3 to 6.0 percent per standard deviation of achievement],
  - -- a small negative effect on the risk of unemployment immediately after high school.

- Results of an analysis of the Youth Cohort of the National Longitudinal Survey are summarized in figures 5 and 6 (Bishop, 1988). It was found that during the first 8 years after leaving high school, young men received no rewards from the labor market for developing competence in science, language arts and mathematical reasoning. The only competencies that were rewarded were speed in doing simple computations (something that calculators do better than people) and technical competence (knowledge of mechanical principles, electronics, automobiles and shop tools). For the non-college bound female, there were both wage rate and earnings benefits to learning advanced mathematics but no benefits to developing competence in science or the technical arena. Competence in language arts did not raise wage rates but it did reduce the incidence of unemployment. The payoff to science, language arts and mathematical reasoning competency was higher for female college graduates than for female high school graduates. For both males and females, age increased the payoff to computational speed but had no effect on the payoff to the verbal, scientific and mathematical reasoning competencies.

The long delay before labor market rewards are received is important because most teenagers are short sighted and liquidity constrained, so benefits promised for 10 years in the future may have little influence on their decisions.

Although the economic benefits of higher achievement to the employee are quite modest and do not appear until long after graduation, the benefits to the employer (and therefore, to national production) are immediately realized in higher productivity. Over the last 80 years, industrial psychologists have conducted hundreds of studies, involving hundreds of thousands of workers, on the relationship between productivity in particular jobs and various predictors of that productivity. They have found that scores on tests measuring competence in reading, mathematics, science and problem solving are strongly related to productivity in almost all of the civilian jobs studied (Ghiselli 1973; Hunter 1983).[3] Studies conducted by the military similarly find that scientific, technical and mathematical reasoning competencies have large effects on both paper and pencil measures of job knowledge and hands-on measures of job performance (Hunter, Crosson and Friedman 1985). A recent study of Marine recruits found, for example, that holding a battery of other tests constant that a one standard deviation increase in two mathematical reasoning subtests increased a work sample measure of job performance by .183 standard deviation (SD) in skilled technical jobs, .24 SD in skilled electronic jobs, .34 SD in general maintenance jobs, .447 SD in clerical jobs, .22 SD for missile battery operators and food service jobs and .416 SD in field artillery jobs. Verbal and science subtests also had significant effects on job performance. Holding other tests constant, a standard deviation increase on four subtests measuring mechanical and technical knowledge resulted in a job performance gain of .415 SD in skilled technical jobs, of .475 SD in skilled electronics jobs, of .316 SD in general maintenance jobs, .473 SD in mechanical maintenance jobs, of .450 SD for missile battery operators and food service workers, of .345 SD in combat occupations and .270 SD in field artillery (Bishop 1988b).

Figure 7 compares the percentage effect of mathematical and verbal achievement (specifically a difference of three grade level equivalents in test scores or .7 Grade Point Average (GPA) points (on a 4 point scale) on the productivity of a clerical worker, on wages of male clerical workers (Taubman & Wales, 1975), and on the wages of young women who have not gone to college (Kang & Bishop, 1984; Meyer, 1982). Productivity clearly increases much more than wage rates.[4] Apparently, when a non-college-bound student works hard in school and improves his or her competence in language arts, science and mathematical reasoning, the youth's employer reaps much of the benefit. The youth is more likely to find a job, but not one with an appreciably higher wage.

Reasons for the Discrepancy between Wage Rates and Productivity on the Job

Why doesn't competition between employers result in much higher wages for those who achieve more in high school? The lack of objective information available to employers on applicant accomplishments, skills, and productivity explains much. Tests are available for measuring competency in reading, writing, mathematics, science, and problem solving, but Equal Employment Opportunity Commission (EEOC) guidelines resulted in a drastic reduction in their use after 1971. A 1987 survey of a stratified random sample of small- and medium-sized employers who were members of the National Federation of Independent Business [NFIB] found that aptitude test scores had been obtained in only 2.9 percent of the hiring decisions studied.

Other potential sources of information on effort and achievement in high school are transcripts and referrals from teachers who know the applicant. Both are under-used. In the NFIB survey, transcripts had been obtained prior to the selection decision for only 14.2 percent of the high school graduates hired. If a student or graduate has given written permission for a transcript to be sent to an employer, the Buckley amendment obligates the school to respond. Many high schools are not, however, responding to such requests. The experience of Nationwide Insurance, headquartered in Columbus Ohio, is probably representative. The company obtains permission to get high school records from all young people who interview for a job. It sent over

1,200 signed requests to high schools in 1982 and received only 93 responses. The company reported that colleges were more responsive. Most high schools have apparently designed their systems for responding to requests for transcripts around the needs of college-bound students rather than the students who seek jobs immediately after graduating.

There is an additional barrier to the use of high school transcripts in selecting new employees -- when high schools do respond, it takes a great deal of time. For Nationwide Insurance the response almost invariably took more than 2 weeks. Given this time lag, if employers required transcripts prior to making hiring selections, a job offer could not be made until a month or so after an application had been received. Most jobs are filled much more rapidly than that.

The only information about school experiences requested by most employers is years of schooling, diplomas and certificates obtained, and area of specialization. Only 15 percent of the NFIB employers asked applicants with 12 years of schooling to report their grade point average. The lack of questions about school performance on the job application does not reflect an employer belief that school performance is a poor predicator of job performance. When employers have grade point average information, it has a major effect on the ratings employers assign to job applicants in policy capturing experiments (Hollenbeck and Smith, 1984). The absence of questions about grades from most job applications probably reflects the low reliability of self reported data, the difficulties of verifying it, and the fear of Equal Employment Opportunity (EEO) challenges to such questions.

Hiring on the basis of recommendations by high school teachers is also uncommon. In the NFIB survey, when a high school graduate was hired, the new hire had been referred or recommended by vocational teachers only in 5.2 percent of the cases and referred by someone else in the high school in only 2.7 percent.

Clearly, hiring selections and starting wage rates often do not reflect the competencies and abilities students have developed in school. Instead, hiring decisions are based on observable characteristics (such as years of schooling and field of study) that serve as signals for the competencies the employer cannot observe directly. A study of how individual wage rates varied with initial job performance found that when people hired for the same or very similar jobs are compared, someone who is 20 percent more productive than average is typically paid only 1.6 percent more. After a year at a firm, better producers received only a 4 percent higher wage at nonunion firms with about 20 employees, and they had no wage advantage at unionized establishments with more than 100 employees or at nonunion establishments with more than 400 employees (Bishop 1987a).

Employers have good reasons for not varying the wage rates of their employees in proportion to their perceived job performance. All feasible measures of individual productivity are unreliable and unstable. In most cases measurement must be subjective. Workers are risk averse and reluctant to accept jobs in which the judgement of one supervisor can result in a large wage decline in the second year on the job (Hashimoto and Yu 1980; Stiglitz 1974). Most productivity differentials are specific to the firm, and this reduces the risk that not paying a particularly productive worker a comparably higher salary will result in him going elsewhere (Bishop 1987a), Pay that is highly contingent on performance can also weaken cooperation and generate incentives to sabotage others (Lazear 1986). Finally, in unionized settings, the union's opposition to merit pay will often be decisive.

Despite their higher productivity, young workers who have achieved in high school do not receive appreciably higher wage rates after high school. The student who works hard must wait many years to reap rewards, and even then the magnitude of the wage and earnings effect -- a 1 to 2 percent increase in earnings per grade level equivalent on achievement tests -- is hardly much of an incentive. It is considerably smaller than the actual gain in productivity that results.

2.2 The Zero-Sum Nature of Academic Competition in High School

The second root cause of high school students' poor motivation is peer pressure against studying hard. The primary reason for peer pressure against studying is that pursuing academic success forces students into a zero-sum competition with their classmates. Their achievement is not being measured against an absolute, external standard. In contrast to scout merit badges, for example, where recognition is given for achieving a fixed standard of competence, the schools' measures of achievement assess performance relative to fellow students through grades and class rank. When students try hard to excel, they set themselves apart, cause rivalries and may make things worse for friends. When we set up a zero-sum competition among close friends, we should not be surprised when they decide not to compete.

All work groups have ways of sanctioning "rate busters." High school students call them "brain geeks," "grade grubbers," and "brown nosers."

Young people are not lazy. In their jobs after school and on the football field, they work very hard. In these environments they are part of a team where individual efforts are visible and appreciated by teammates. Competition and rivalry are not absent, but they are offset by shared goals, shared successes and external measures of achievement (i.e., satisfied customers or winning the game). On the sports field, there is no greater sin than giving up, even when the score is hopelessly one sided. On the job, tasks not done by one worker will generally have to be completed by another. In too many high schools, when it comes to academics, a student's success is purely personal.

The second reason for peer norms against studying is that most students perceive the chance of receiving recognition for an academic achievement to be so slim they have given up trying. At most high school awards ceremonies, the academic recognition goes to only a few -- those at the very top of the class. By 9th grade, most students are already so far behind the leaders, that they know they have no chance of being perceived as academically successful. Their reaction is often to dismiss the students who take learning seriously and to honor other forms of achievement -- athletics, dating, holding their liquor, and being "cool" -- which offer them better chances of success.

2.3 Incentives to Upgrade Local Schools

The lack of external standards for judging academic achievement and the resulting zero-sum nature of academic competition in the school also influences parents, school boards, and local school administrators. Parents can see that setting higher academic standards or hiring better teachers will not on average improve their child's rank in class or GPA. The Scholastic Aptitude Test (SAT) does not assess knowledge and understanding of science, history, social science, trigonometry, statistics and calculus or the ability to write an essay. Consequently, improving the teaching of these subjects at the local high school will have only minor effects on how my child does on the SAT, so why worry about standards? In any case, doing well on the SAT matters only for those who aspire to attend a selective college. Most students plan to attend open entry public colleges which admit all high school graduates from the state with the requisite courses. Scholarships are awarded on the basis of financial need, not academic merit.

The parents of children not planning to go to college have an even weaker incentive to demand high standards at the local high school. They believe that what counts in the labor market is getting the diploma, not learning algebra. They can see that learning more will be of only modest benefit to their child's future, and that higher standards might put at risk what is really important -- the diploma.

Only when educational outcomes are aggregated, at the state or national levels, do the real costs of mediocre schools become apparent. The whole community loses because the work force is less efficient, and it becomes difficult to attract new industry. Competitiveness deteriorates and the nation's standard of living declines. This is precisely why employers, governors, and state legislatures have been the energizing force of school reform. State governments, however, are far removed from the classroom, and the instruments available to them for inducing improvements in quality and standards are limited.

The number of academic courses required for graduation has been increased but research shows that learning gains in math, science, social studies and English are a function of the rigor not the number of courses taken (Bishop 1985). States do not have effective control of the standards and expectations that prevail in the classroom. Even in New York State where state administered examinations give the Board of Regents a great deal of power over what is taught, taking Regents courses is voluntary and the use of Regents exam scores as grades is at the option of the teacher and the local school board.

State aid can be increased but econometric studies of local school expenditures suggest that only a portion of such increases result in permanent increases in local school spending. The rest ends up slowing the rate of increase of property taxes.

A consensus appears to have emerged that the first wave of top-down reforms had only modest effects and that a new wave of bottom-up reform "empowering" teachers and principals is required. A local superintendent admitted to me, however, that without the pressure from the state he was doubtful anything would be done. Reformers are hoping that the publication of comparative data on student performance in different school districts and the threat of state takeover of local school districts will spur principals, teachers and local school boards to upgrade the schools. While publishing performance data has a positive effect, the practice is already wide spread and cannot be expected to produce further major improvements in standards and outcomes. In our system all the really important decisions -- budget allocations, hiring selections, salary levels, homework assignments, teaching strategies, grading standards, course offerings, pupil assignments to courses and programs, disciplinary policies, etc. -- are made by classroom teachers and school administrators who are responding to local political pressures. If the parents voting in school board elections, do not believe that a more rigorous math and science curriculum will help their children get a better job or into the college of their choice, state mandates designed to raise standards in these courses will have no lasting effect.

2.4 Incentives to Learn in Other Nations

The tendency not to reward effort and learning in high school appears to be a peculiarly American phenomenon. Marks in school are the major determinant of who gets the most preferred apprenticeships in Germany. In Canada, Australia, Japan, and Europe, educational systems administer achievement exams which are closely tied to the curriculum. Performance on these exams is the primary determinant of admission to a university and to a field of study. Job applicants typically include their exam grades on their resumes. Two examples of resumes used by Irish secondary school graduates applying for clerical and blue collar jobs are attached as Exhibit 1 and 2. Good grades on the toughest exams -- physics, chemistry, advanced mathematics -- carry particular weight with employers and universities.

In Japan, clerical, service and blue collar jobs at the best firms are available only to those who are recommended by their high school.

The most prestigious firms have long term arrangements with particular high schools to which they delegate the responsibility of selecting the new hire(s) for the firm. The criteria by which the high school is to make its selection is, by mutual agreement, grades and exam results. In addition, most employers administer their own battery of selection tests prior to hiring. The number of graduates that a high school is able to place in this way depends on its reputation and the company's past experience with graduates from the school. Schools know that they must be forthright in their recommendations because if they fail just once to make an honest recommendation, the relationship will be lost and their students will no longer be able to get jobs at that firm (Rosenbaum and Kariya 1987).

Parents in these countries know that a child's future depends critically on how much is learned in secondary school. In many countries the options for upper secondary schooling depend primarily on the child's performance in lower secondary school, not on where the parents can afford to live as in the U.S. Since the reputation of the high school is so important, the competitive pressure often reaches down into junior high school. National exams are the yardstick, so achievement tends to be measured relative to everyone else's in the nation and not just relative to the child's classmates. As a result, parents in most other Western nations demand more and get more from their local schools than we do and yet, nevertheless, are more dissatisfied with their schools than American parents.

Japanese teenagers work extremely hard in high school, but once they enter college, many stop working. For students in non-technical fields a country club atmosphere prevails. The reason for the change in behavior is that when employers hire graduates with non-technical majors, they base their selections on the reputation of the university and a long series of interviews and not on teacher recommendations or other measures of academic achievement at the university. Students in engineering and other technical programs work much harder than their liberal arts counterparts largely because job opportunities depend entirely on the recommendation of their major professor. **Studying hard is not a national character trait, it is a response to the way Japanese society rewards academic achievement.**

American students, in contrast, work much harder in college than in high school. This change is due, in part, to the fact that academic achievement in college has important effects on labor market success. When higher level jobs requiring a bachelors or associates degree are being filled, employers pay more attention to grades and teacher recommendations than when they hire high school graduates. The NFIB survey found that when college graduates were hired, 26 percent of the employers had reviewed the college transcript before making the selection, 7.8 percent had obtained a recommendation from a major professor and 6.3 percent had obtained a recommendation from a professor outside of the graduates major or from the colleges's placement office.

III. EMPLOYER SELECTION CRITERIA: IS THERE A TRADEOFF BETWEEN SORTING EFFICIENCY AND INCENTIVES TO LEARN?

The lack of true engagement in learning and the apathy of local political systems regarding the quality of local schools is to an important degree a consequence of the failure of employers to reward students for real learning achievements. The solution is for employers (particularly those with attractive jobs) to use academic achievement as an important selection criterion when hiring recent high school graduates. Academic achievement is not directly observable, however, so employers must base their decisions on imperfect signals of true achievement. The incentive effects of employer hiring behavior depend on which signals they choose to use. The sorting of workers to jobs will also depend on this choice. Thus the choice of a signal of academic achievement has efficiency and distributional effects as well as incentive effects and all need examination. In this section we investigate whether there is a tradeoff between the goal of generating incentives to learn and the efficient sorting of workers to jobs? The discussion of the distributional consequences of making academic achievement a more important factor in hiring selections is postponed to the final section of the paper.

Sorting-efficiency will tend to be maximized when separate competencies are measured and employers select workers with the particular combination of competencies that are needed in its jobs. In other words, selection/classification protocols should attempt to assign workers to occupations in which they have a comparative advantage. Measures of academic achievement should be used but they should supplement not displace consideration of other predictors of job performance and longevity such as relevant training and experience. If most of the people hired into an entry job move up to other more responsible positions, the criteria applied at the port of entry needs to take the higher level jobs into account.

The analysis presented in the first part of the paper implies that student incentives to learn and parental incentives to demand a quality education are maximized when the following are true: (1) _significant_ economic rewards depend directly and _visibly_ on academic accomplishments, (2) the accomplishment is defined relative to an _externally imposed standard of achievement_ and not relative to one's classmates, (3) the reward is received quickly, (4) everyone, including those who begin high school with serious academic deficiencies, has an _achievable goal_ which will generate a significant reward and (5) progress toward the goal can be monitored by the student, parents and teachers.

We will see shortly that it is not easy to design a system of signaling and certifying academic achievement which satisfies all of these requirements. Consequently, it will generally be desireable to use more than one signal of academic achievement and to use different signals when selecting for different jobs. Let us examine the alternatives.

Diplomas:

High school diplomas and college degrees are effective devices for generating incentives to enroll in school. The standard diploma does not, however, generate incentives to attend regularly or to study hard. Establishing a minimum competency level for receiving a high school diploma only slightly improves incentives. Some students arrive in high school so far behind and the consequences of not getting a diploma are so severe, that minimum competency standards are not set very high (and cannot in good conscience be set too high given the constraints on the system). Once they satisfy the minimum, many students stop putting effort into their academic courses.

Schooling is a valid predictor of job performance but to a great degree its validity derives from its correlation with test scores. The evidence on its incremental contribution to validity, once test scores are controlled, is more mixed. An analysis of GATB revalidation data by Bishop (1987b) found very weak effects of schooling but this is probably an artifact of the selection biases (Mueser and Maloney 1988). Selection into the military is based explicitly on the test scores and high school graduation, not on unobservables as in the civilian sector. Since selection is based on X variables, selection effects can be corrected for (Dunbar and Linn 1986). Analysis of military data finds that high school graduation has its own unique impacts when test scores are controlled. Weiss's (1985) study of Western Electric employees found that completing high school is a valid predictor of low absenteeism and low turnover but not job performance. Thus even when studies find that graduating from high school has little effect on job performance, it appears to effect retention. Consequently, from a sorting-efficiency point of view, the high school diploma belongs on the list of credentials considered by employers even when test scores are available.

Competency Profiles:

Competency profiles are check lists of competencies that a student has developed through study and practice. The ratings of competence that appear on a competency profile are relative to an absolute standard, not relative to other students in the class. Zero-sum competition between classmates is forestalled by such a system of evaluation.

Vocational educators have found that competency profiles greatly enhance the effectiveness of competency-based vocational education. The approach is just as applicable to academic courses as it is to vocational courses. Upon graduation, the competency profile is often encased in plastic and serves as a credential certifying occupational competencies. If the ratings by teachers (and the sponsoring employers of cooperative education students) are reliable indicators of competence, employers will find this information valuable, and the students who build a good record will be rewarded. I am not aware of any research on the validity of locally developed competency profiles.

Hiring Based on Grades in High School:

Using grades to select new hires results in a very visible dependence of labor market outcomes on an indicator of academic accomplishment. There are, however, two disadvantages. It results in zero-sum competition between classmates and consequently contributes to peer pressure against studying and parental apathy about the quality of teaching and the rigor of the curriculum. The second problem is that it induces students to select easy courses and thus tends to cause grade inflation. These problems can be mitigated somewhat if employers take the rigor of courses into account when evaluating grades, give preference to schools with tough grading standards, and vary the number hired from particular schools in response to the actual job performance of past hires from that school. From the sorting point of view, the disadvantage of high school GPA is that it has low validity when there are no adjustments made for grading standards and it is difficult for employers to make such adjustments.[5]

Job Tryout and Promotions Based on Performance:

From the point of view of motivating students to study, the problem with job tryout and performance reward systems is that the dependence of labor market outcomes on academic achievements is both invisible and considerably delayed.

From the efficiency point of view, the disadvantages of job tryout are the costs of training workers who end up being fired, its unpopularity with workers who will spend months unemployed if they are fired, and its potential for generating grievances. Performance evaluations are known to be unreliable, and this makes workers reluctant to take jobs in which next year's pay is highly contingent on one supervisor's opinion. Pay that is highly contingent on performance can also weaken cooperation and generate incentives to sabotage others. The benefits of performance reward systems are that they motivate better performance, they tend to attract high performers to the firm, and they tend to induce the high performers to stay at the firm. When these factors are balanced, it appears that most workers and employers choose compensation schemes in which differentials in relative productivity result in relatively small wage differentials (Bishop 1987a).

Job Knowledge Tests:

From the point of view of learning incentives, the disadvantage of job knowledge tests is that they generate no incentives to study history and literature and generate incentives to study math and science only occasionally (i.e., when the student expects to seek a technical job and the job knowledge tests for these jobs contain math and science questions relevant to the job). They may also induce students to over-specialize in school. If at some point in their career a job in the field for which they prepared is not available, they are left high and dry.

From the point of view of sorting efficiency, job knowledge tests have much to recommend them for they maximize classification efficiency. They are particularly appropriate if applicants vary in their knowledge and background in the occupation, and training costs are substantial. If new hires are likely to be quickly promoted into higher level jobs, the job knowledge test should also cover the skills required in these jobs. Job knowledge tests are less useful when none of the applicants has experience in the field and training costs are low.

IQ Tests:

Students, parents and teachers view IQ tests as measuring something that schools do not teach. Even though this public perception is not entirely correct, the perception is not likely to change in the near future, so hiring on the basis of IQ tests fails requirement # 1.

Students will not see the connection between how hard they study and higher IQ scores.

General Aptitude Test Battery (GATB):

The cognitive subtests of the current GATB measure only a limited number of very basic skills -- vocabulary, reading, arithmetic computation and reasoning. There are no sub-tests measuring achievement in most of the subjects in the standard high school curriculum -- science, social science, algebra, high school geometry or trigonometry. Greater use of the GATB to make hiring selections would strengthen incentives to learn arithmetic and English but would not strengthen incentives to study other high school subjects. Consequently, hiring on the basis of the GATB fails requirement # 1.

On the other hand, a large body of research suggests that the cognitive subtests of the GATB are valid predictors of job performance in many private sector jobs (Hunter 1983), that it is valid for both minority and majority populations, and not biased against minorities (Schmidt 1988). This research implies that it is in the private interest of individual companies to use these tests for selection. The social benefit of greater test use depends on whether the abilities measured by the tests have larger impacts on worker productivity in dollars in some occupations than in others and whether greater test use would improve the allocation of workers across occupations and jobs. Since the cognitive competencies measured by the GATB do have significantly larger payoffs in plant operator, technical and craft jobs than in operative, service and sales clerk jobs (Hunter 1983; Hunter, Schmidt and Judiesch 1988; Bishop 1988a), reassigning workers who do well on a test to occupations where the payoff to the talent is particularly high will increase aggregate output. Bishop (1988a) has estimated the magnitude of the output effect by reweighting the 31,399 individuals in the GATB revalidation data to be representative of the 71 million workers in the non-professional and non-managerial occupations, and then simulating a resorting of workers. Reassigning workers on the basis of occupational work experience and three GATB composites -- basic mathematical and verbal skills, perceptual speed, and psychomotor ability -- raises total output by 6.9 percent of labor compensation, all but eliminates gender segregation in the work place and substantially improves the wage levels of jobs held by women, but has adverse impacts on blacks and Hispanics. As discussed in the paper, the simulation probably overstates the effect of greater test use so the true effect is more likely to be about 2 or 3 percent of compensation or between $60 and $90 billion per year. Thus, the sorting benefits of greater use of the GATB in selection decisions are quite substantial. We will see shortly, however, that other selection methods -- broad spectrum achievement tests and achievement exams assessing the student's mastery of the high school curriculum -- are able to achieve at least as efficient sorting outcomes as the GATB and generate much better incentive effects.

Broad Spectrum Achievement Tests:

From the point of view of incentives to study a broad range of academic subjects, broad spectrum achievement tests such as the Armed

Services Vocational Aptitude Battery (ASVAB) are the best of the alternatives reviewed so far. If some of the subtests in the battery include material covered in the standard college-prep high school curriculum such as algebra, statistics, chemistry, physics and computers, the use of such tests for selection would generate parental pressure for an upgraded curriculum and encourage high school students to take more rigorous courses. When many employers use achievement tests to select new employees, everyone who wants a good job faces a strong incentive to study, and those not planning to go to college will find the incentive especially strong. The best paying firms will find they can set higher test-score cutoffs than low paying firms, so the reward for learning will become continuous. Whether one begins 9th grade way behind or way ahead, there will be a benefit on the margin to studying hard for it will improve one's job prospects.

Broad spectrum achievement tests covering science, computers, mechanical principles, economics, business practices, and technology as well as mathematics, reading, and vocabulary, also maximize sorting benefits as well. Test batteries which cover the full spectrum of knowledge and skills taught in high school are more valid predictors of job performance than tests which assess math and verbal skills only. Evidence for this statement comes from examining the relative contributions of various subtests to the total validity of the ASVAB battery. Maier and Grafton's (1981) analysis of the job performance Skill Qualification Tests (SQT) of Marine Corps recruits found, for example, that validity (corrected for restriction of range) was .46 for auto shop information, .50 for mechanical comprehension, .51 for electronics information, .51 for general science, .50 for word knowledge, .52 for mathematics knowledge, and .51 for arithmetic reasoning. Tests measuring electronics, mechanical, automotive and shop knowledge -- material that is generally studied only in vocational courses -- have high validity. Analyzing this and other military data sets, Hunter, Crosson and Friedman (1985) concluded that the "general cognitive ability" construct that best predicted performance in all military jobs included subtests in general science, electronics information, mechanical comprehension and mathematics knowledge as well as conventional word knowledge and arithmetic reasoning subtests. The addition of these four subtests to the construct increased validity by 11 percent and the proportion of true job performance variance explained in the Maier and Grafton data from .306 to .372 (Hunter, Crosson and Friedman, 1985, Table 19).

Broad spectrum achievement test batteries also improve classification efficiency. The technical subtests of ASVAB are important predictors of hands-on measures of job performance in technical and maintenance jobs but did not contribute to the prediction of performance in clerical jobs. Verbal subtests contributed to clerical performance but did not correlate with performance in many of the other jobs in the study. Tests measuring understanding of statistics, business, economics, marketing and psychology would probably similarly improve the validity of batteries used to select workers for most white collar jobs in the private sector. The conclusion that follows from this analysis is that, on both sorting and incentive grounds, broad spectrum achievement test batteries are preferable devices for selecting workers than the cognitive subtests of the GATB.

Performance on Achievement Exams Taken at the End of Secondary School

In Canada, Australia, Japan and most European countries, the educational system administers achievement test batteries (e.g., the 'O' and 'A' Levels in the UK, the Baccalaureate in France) which are closely tied to the curriculum. While the Japanese use a multiple choice exam, all other nations use extended answer examinations in which students write essays and show their work for mathematics problems. Generally, regional or national boards set the exam and oversee the blind grading of the exams by committees of teachers.[6] These are not minimum competency exams. In many subjects the student may choose to take the exams at two different levels of difficulty. Excellence is recognized as well as competence. In France, for example, students who pass the Baccalaureate may receive a "Tres Bien", a "Bien", an "Assez Bien" or just a plain pass. These exams generate credentials which signal academic achievement to all employers and not just the employers who choose to give employment tests. The connection between one's effort in school and performance on these exams is clearly visible to all. Consequently, school sponsored achievement exams like those used in Europe would have much stronger incentive effects than employer administered broad spectrum achievement tests.

This approach to signaling academic achievement has a number of advantages. Because it is centralized and students take the exam only once, job applicants do not have to take a different exam at each firm they apply to and the quality and comprehensiveness of the test can be much greater. There is no need for multiple versions of the same test and it is much easier to keep the test secure. By retaining control of exam content, educators and the public influence the kinds of academic achievement that are rewarded by the labor market. Societal decisions regarding the curriculum (e.g., all students should read Shakespeare's plays and understand the Constitution) tend to be reinforced by employer hiring decisions. Tests developed solely for employee selection purposes would probably place less emphasis on Shakespeare and the Constitution.

One possible disadvantage of schools administering the achievement exams is that students have fewer chances to demonstrate their competence. If one has an off day, one must typically wait an entire year before the exam can be retaken. With employer administered exams, having an off day is less damaging for one will shortly have a chance to do better at another employer. If desired, however, students may be given the opportunity of taking the exam a second time a few months later. This is what Finland does and retaking the exam is quite common. The once and for all feature is not inevitable, however.

With regard to validity, there is probably little to choose between the two systems. Separate scores are reported for each subject so employers may focus on the tests which have special relevance to their jobs. School administered tests are more reliable measures of achievement because they sample a much larger portion of the student's knowledge of the field (the ASVAB General Science subtest, by contrast, allows the student 11 minutes to do 24 items). They may also be more valid because they are not limited to the multiple choice format. Thus, even though the topics covered in the school exam are probably less relevant to the firm's jobs, the school exam is probably just as valid a predictor of job performance as a specially designed employment test.

IV. POLICY RECOMMENDATIONS

The key to motivation is recognizing and rewarding learning effort and achievement. Individual learning goals should be established which challenge the student to the maximum extent possible and achievement of these goals should be recognized at a school awards ceremony and communicated to the labor market. If employers know who has learned, they will provide the rewards. There must be significant rewards for learning and real consequences for failing to learn. Learning accomplishments need to be described on an absolute scale so that improvements in the quality and rigor of the teaching and greater effort by all students makes everybody better off.

Some might respond to this strategy for achieving excellence by stating a preference for intrinsic over extrinsic motivation of learning. This, however, is a false dichotomy. Nowhere else in our society do we expect people to devote thousands of hours to a difficult task while receiving only intrinsic rewards. Public recognition of achievement and the symbolic and material rewards received by achievers are important generators of intrinsic motivation. They are, in fact, one of the central ways a culture symbolically transmits and promotes its values.

The policy recommendations have been grouped into four categories: school sponsored signals of academic achievement made available to employers, reforming college admissions criteria, greater use of more valid broad based achievement tests for selecting workers and more powerful school administered incentives for academic achievement.

4.1 Improving Measures of Academic Achievement so the Labor Market will Reward Effort in High School

The first best solution to the incentives problem is for the educational system to take on the job of deciding what academic and vocational competencies are to be measured and how they are to be signaled to employers. Schools should provide graduates with certificates or diplomas that certify the students' knowledge and competencies, not just their attendance. Competencies should be defined relative to an absolute standard in the way Scout merit badges are. Different types of competency need to be distinguished and different levels of competency signaled.

Instituting Statewide Achievement Examinations

States should adopt statewide tests of competency and knowledge that are specific to the curriculum being taught (e.g., New York State's Regents Examinations) and then give students a competency profile certifying performance on each of these exams which could be used as an aid in searching for jobs. State merit based scholarships should be awarded on the basis of student performance on these achievement exams. Such examinations would offer several benefits.

- Better inform students and parents about how well the student is doing and thus help parents work with teachers to improve their children's performance.

- Make the relationship between teachers and students more cooperative, with the teacher and students working jointly to prepare the students for the exam.

- Strengthen student incentives to learn. Academic achievement would be measured on an absolute scale rather than relative to other students at the school.

- Create a database that school boards and parents could use to evaluate the quality of education being provided by their local school.

- Enable employers to use scores on these examinations to help improve their selection of new employees. If the uncertainties involved in hiring are reduced, expanding employment will become more profitable, total employment will increase, and recent high school graduates will be better able to compete with more experienced workers.

Local Competency Profiles

Another way to motivate students is to give them feedback on their accomplishments through the mechanism of a criterion referenced competency profile. Competency profiles are check lists of competencies that are the goals of instruction. By evaluating students against an absolute standard, the competency profile avoids a negative feedback of one student's effort into another student's grade and encourages students to share their knowledge and teach each other.

A second advantage of the competency profile approach to evaluation is that students can see their progress as new skills are learned and checked off. The skills not yet checked off are the learning goals for the future. Seeing such a check list get filled up is inherently reinforcing.

With a competency profile system, goals can be tailored to the student's interests and capabilities, and progress toward these goals can be monitored and rewarded. Students who have difficulty in their required academic subjects can, nevertheless, take pride in the occupational competencies that they are developing and which are now recognized just as prominently as course grades in academic subjects.

A great many vocational programs currently use competency profiles both to structure instruction and as a system for articulating with the labor market and further training. At present, the profiles assess occupational skills and employability skills but there is no reason why academic competencies could not be included in the profile. Some thought needs to be given to how more generic competencies such as numeracy and writing should be measured, how some standardization can be achieved, and how these profiles can be made more accessible and useful.

Graduation Credentials ("Career Passport", "Competency Portfolio") which Signal the Student's Accomplishments in High School.

The coverage and format of the document should probably be worked out cooperatively by a committee that includes school administrators, employers and other interested parties. Developing and using such a document might be a part of a campaign to enlist commitments from major local employers to hire students as interns (during the summer) and new graduates. Some degree of compactness and standardization is desireable in order to make it easier for employers to use information in their hiring decisions. Students might also be encouraged to develop a portfolio of completed projects -- for example a research report, pictures of a cabinet made in shop class, art work). Employers should be encouraged to ask to see the portfolio and make a copy of it to attach to the application.

Releasing Student Records

The school can help students provide employers with information by developing an equitable and efficient policy for releasing student records. While developing this policy, school officials should keep in mind their dual responsibilities of protecting the student's right to privacy and helping students find a good, suitable job. The student and his or her parents should receive copies (encased in plastic) of transcripts and other records that might be released so that they may make them available to anyone they choose.

Schools can develop a form that would explain to parents and students their rights, as well as the pros and cons of disclosing information. The Buckley Amendment requires that the form specify the purpose of disclosure, which records are to be released, and who is to receive the records. The law allows the student to specify a "class of parties." The class specified could be "all potential employers contacted by the student," which would cut down on the paper work needed. Once the student has filed a request, the school is required by law to comply. Schools can best serve students by handling all inquiries expeditiously and without charge.

Credential Data Bank and Employee Locator Service

It may, however, be unrealistic to expect 22,902 high schools to develop efficient systems of maintaining student records and responding quickly to requests for transcripts. An alternative approach would be to centralize the record keeping and dissemination function in a trusted third party organization. This organization would be easy to regulate and thus everyone could be assured that Buckley amendment privacy mandates are being observed. The student would determine which competencies to have assessed and what types of information to include in his/her competency portfolio. Competency assessments would be offered for a variety of academic subjects and occupational skills. Tests with many alternate forms (or administered by computer based on a large test item bank) would be used so that students could retake the test a month later if desired. Only the highest score would remain in the system. Students would be encouraged to include descriptions of their extracurricular activities, their jobs and any other accomplishments they feel are relevant, and to submit samples of their work such as a research paper, art work or pictures of a project made in metal shop. Files could be updated after leaving high school.

Students would have three different ways of transmitting their competency profile to potential employers. First, they would receive certified copies of their portfolio which they could carry to job interviews or mail to employers. Second, they would be able to call an 800-number and request that their portfolio be sent to specific employers. Thirdly, they could ask to put themselves in an employee locator data bank similar to the student locator services operated by the Educational Testing Service and The College Board. A student seeking a summer or post-graduation job would specify type of work sought and dates of availability. Employers seeking workers could ask for a print out of the portfolios of all the individuals living near a particular establishment who have expressed interest in that type of job and who pass the employer's competency screens. Student locator services have been heavily used by colleges seeking to recruit minority students and an employee locator service would almost certainly be used in the same way. This will significantly increase the rewards for hard study because the employee locator service is likely to result in a bidding war for the qualified minority students whose portfolios are in the system.

4.2 Reform College Admission Policies

Promote Advanced Placement Courses

The Advanced Placement (AP) program is a cooperative educational endeavor which offers course descriptions, examinations and sets of curricular materials in 28 different academic subjects. Students who take these courses and pass the examinations receive college credit for high school work. Expanding and upgrading the AP program should be a center piece of any effort to promote excellence in American secondary education. It clearly meets a felt need for it is growing rapidly. The numbers of students taking AP exams more than doubled between 1983 and 1988. Nevertheless, only 8022 of the 22,902 U.S. high schools participate in the Advanced Placement Program and only 52 AP exams are taken on average in each participating high school. In 1988 only 6.6 percent of the seniors and 3.3 percent of the juniors took an AP exam (The College Board 1988). The nation should set a goal of doubling these percentages by 1991 and quadrupling them by 1995. Acting in concert, the college presidents of the 200 most selective colleges in the nation should send a letter to the every high school principal in the country (with copy to the school board and local newspaper) urging them to create an AP program or expand the one they have. They should also announce that starting in 1993, students seeking admission to their school should have taken and passed at least one AP course in junior year and be taking more than one AP course their senior year.[7] Students coming with AP credit should be placed in more advanced courses and as soon as possible these more advanced courses should become the normal starting point for college freshman who intend to concentrate in the field.

The federal government can facilitate the growth of the AP program by financing summer institutes for the teachers of AP courses and by offering a $100 AP Excellence Award (larger if the student is eligible for Pell Grant aid) to every student who gets an "eligible for college credit" score on the exam and a $150 award for getting a top score. To insure that attending a summer institute is considered a plum, compensation should be generous. In 1988 approximately 42,000 teachers taught AP courses. Rapid expansion of the program will require a yearly increase of 8000 in the stock of teachers teaching AP courses and if half of the increment to the stock were to experience summer institute training for 6 weeks, the cost would be about 28 million dollars. In 1988 286,009 students would have been eligible for an AP excellence award so the program would have cost under 40 million dollars. The purpose of the AP Excellence Award is to honor excellence and encourage students to take AP courses and only secondarily to aid in the finance of higher education. If a good deal of publicity were attached to these awards, they would have major symbolic effects.

Induce Colleges to Drop the SAT and ACT Tests from their Selection Criteria and Substitute Scores on AP and Regents Type Exams Which Cover the Curriculum Taught in High School

While national tests are necessary, the Scholastic Aptitude Test (SAT) is not the kind of test that is helpful. The SAT suffers from two very serious limitations: the limited range of the achievements that are evaluated and its multiple choice format. The test was designed to be curriculum free. To the extent that it evaluates the students' understanding of material taught in schools, the material it covers is vocabulary and elementary and junior high mathematics. Most of the college preparatory subjects studied in high school -- science, social studies, technology, art, music, computers, trigonometry and statistics -- are completely absent from the test. As a result, it fails to generate incentives to take the more demanding courses or to study hard. The multiple choice format is also a severe limitation. National and provincial exams in Europe are predominantly essay and extended answer examinations. The absence of essays on the SAT and the American College Test (ACT) tests contribute to the poor writing skills of American students. The tests are advertised as ability tests but are in fact achievement tests measuring a very limited range of achievements (Jencks and Crouse 1982). Jencks and Crouse have recommended that either the SAT evaluate a much broader range of achievements or be dropped in favor of AP examinations. Knowledge and understanding of literature, history, technology and science and higher order thinking skills should all be assessed. These exams should not be limited to a multiple choice format and essays should be required where appropriate. Foreign language exams, for example, should test conversational skills as well as reading and writing. Students taking science courses should be expected to conduct experiments and demonstrate the use of lab equipment.

Promote the Development of New Assessment Mechanisms

Linking assessment to the curriculum requires a greater diversity of assessment mechanisms. States should not be prevented from having their own unique curriculum simply because examinations keyed to this curriculum are not available. However, the need for multiple versions and for fairness to minorities make test development very expensive. The federal government should underwrite state consortia and other organizations that seek to develop alternatives to currently available tests and assessment mechanisms. Priority needs to go to developing methods of assessing higher order thinking skills and competencies that cannot be evaluated using a multiple choice format.

While testing organizations would publish and oversee grading of the exams, the subjects covered by the exam and the skills tested would be selected by a committee of teachers and specialists in the field. Examples of groups that might sponsor and direct test development are the National Council of Teachers of Mathematics, associations of private colleges, state boards of education, and textbook publishers. There should be a conscious effort to maximize philosophical and educational diversity in the selection of consortia for funding. The push for better measures of student learning should not be limited to the academic arena. A similar effort should be made in the vocational area. Consideration should be given to federal subsidies of the administration cost of more costly assessment mechanisms such as essays, judged portfolios, hands-on performance tests and simulations designed to measure higher order thinking skills.

4.3 Greater Use of Improved Employment Tests

If states do not adopt a credentialing system based on statewide achievement testing, employer testing must be allowed so that the labor market will reward effort and learning in high school.

Add Subtests Measuring Technical, Scientific and Advanced Mathematical Competency to the General Aptitude Test Battery

The Employment Service's program of validity research for the GATB has made this test one of the few employment tests whose validity (as a predictor of job performance) has been generalized for a great variety of jobs. The content of the GATB was set in the 1940s and there has been little change in the content of the academic subtests since then. The nature of jobs has changed substantially and it is time to rethink the content of the GATB. The ASVAB research discussed earlier indicates that validity would be substantially increased by adding subtests measuring technical, scientific and advanced mathematical knowledge and skills. The Department of Labor should immediately add subtests similar to the technical, mathematical knowledge and science subtests of the ASVAB to the GATB and include these subtests in the composites that are used for recommending clients to civilian jobs that are similar to the jobs studied in the military. The employment service should also undertake a major study of the validity of the new GATB in the full spectrum of civilian jobs.

The fear of litigation has significantly inhibited testing research outside of government. Companies no longer share the results of their validity studies or allow them to be published (even when the company's name is withheld) for fear of revealing their defense strategy to a potential litigant. As a result, research on tests other than the GATB has been inhibited. The government needs to step into the vacuum it has created and sponsor a major increase in research into the development and validation of improved employment tests.

EEOC Regulations Should Encourage the Use of Broad Spectrum Achievement Test Batteries rather than IQ Tests and the Current GATB

EEOC regulations and case law have in the past required that a very expensive validation study be conducted before a firm can use any test to help select employees (Friedman and Williams 1982). The result has been to greatly diminish the use of tests for employee selection and to substantially reduce the rewards for learning. The Supreme Court's recent opinion in the Watson case appears to open the door for increased use of employment tests (McDowell and Dodge 1988). It appears that employers will be able to justify the use of employment tests without having to undertake costly validity studies in their own firm by citing validity research done for similar jobs in other firms. Since civilian research on test validity has used the GATB almost exclusively, there is a very real danger that most firms will choose to use reading, vocabulary, and arithmetic reasoning tests that are demonstrably similar to their GATB counterparts. Unfortunately, the verbal and mathematical subtests of the GATB are considerably less valid than tests measuring a broader range of competencies and do not generate incentives for students to study history, algebra, trigonometry, and science.

Courts have in the past required that employers demonstrate that each question on an employment test has a specific application in each job for which it is a proposed selection device. To avoid having to redesign tests for each job, test developers are likely to "dumb" the test down and include only simple questions covering mathematical, scientific and technical principles that are learned in grade school. Litigation costs and the potential liability are enormous, so companies have become extremely cautious about testing. When selecting a test, defensibility in court has become a much more important criterion than maximum validity. Given the uncertainty of whether ASVAB research will be accepted as evidence on the validity of similar tests for civilian jobs, broad spectrum achievement test batteries will probably be judged too risky. A well designed validity study can protect a firm using an unconventional test battery but in most cases the potential benefit of finding a more valid selection method will not outweigh the costs of the study and the greater risks of litigation. If things are left as they are, it will be at minimum a decade before tests measuring competence in algebra, science and the technical arena can be used as general selection devices for craft and other blue collar jobs. Firms need to be given a signal by the EEOC that broad spectrum achievement tests are acceptable selection devices and in fact preferred over the low level basic skills test that now define aptitude in the GATB.

For employment tests to generate incentives to learn, students, parents and teachers must be aware that local employers are using tests for selection and what kind of material is included on these tests. Unfortunately, the fear of litigation has caused many employers to give only limited publicity to their use of tests. This is another reason why employers need to be told by people in authority that they are acting in the national interest when they seek out and reward those who have high level academic skills.

The Federal Government Should give Greater Weight to Academic Achievement in its own Hiring

The federal government is the largest employer in the country. It should set an example for the private sector by announcing that hence forth it is giving greater weight to academic achievement in high school and college than it has in the past.

The military currently admits recruits on the basis of Armed Forces Qualification Test (AFQT) scores and the high school diploma. The current AFQT is an average of scores on the verbal, arithmetic reasoning and mathematical knowledge subtests of the ASVAB. By adding the general science, electronics knowledge, mechanical comprehension and the auto/shop knowledge tests to the composite which defines the AFQT, the military would simultaneously increase the validity of their selection and improve incentives to study science and technical subjects in high school.

The Office of Personnel Management is designing a biodata form to be used for selecting professional and managerial personnel for the federal government. The current draft of the form asks applicants a number of questions about the grades in high school and college and about class rank. It does not ask about the difficulty level of the courses taken (Office of Personnel Management, 1987). Current plans are to request that transcripts be sent only for a sample of the applicants and to use this data only for checking the accuracy of the information provided. If discrepancies are discovered for people who were hired, the cases will be referred to investigators. The questions are worded in such a way, however, that only the most outrageous of distortions can be proved to be a lie and therefore are grounds for dismissal. The following changes in civil service hiring procedures are recommended:

- All candidates for civil service jobs (including clerical jobs) should be required to send their high school and college transcripts.
- After a preliminary screening on the basis of the biodata key, course grades and difficulty level indicators should be coded for the most recent school attended.
- Final rankings should be based on a combination of the transcript information, biodata, scores on job relevant tests and other relevant information.

This change will increase hiring costs but the benefits of greater validity and improved incentives outweigh these costs by a large margin.

4.4 School Based Rewards for Learning

Cooperative Learning

One effective way of inducing peers to value learning and support effort in school is to reward the group for the individual learning of its members. This is the approach taken in cooperative learning. Research results (Slavin 1985) suggest that the two key ingredients for successful cooperative learning are as follows:

- A cooperative incentive structure -- awards based on group performance -- seems to be essential for students working in groups to learn better.
- A system of individual accountability in which everyone's maximum effort must be essential to the group's success and the effort and performance of each group member must be clearly visible to his or her group mates.

For example, students might be grouped into evenly matched teams of 4 or 5 members that are heterogeneous in ability. After the teacher presents new material, the team works together on work sheets to prepare each other for periodic quizzes. The team's score is an average of the scores of team members, and high team scores are recognized in a class newsletter or through group certificates of achievement.

What seems to happen in cooperative learning is that the team develops an identity of its own, and group norms arise that are different from the norms that hold sway in the student's other classes. The group's identity arises from the extensive personal interaction among group members in the context of working toward a shared goal. Since the group is small and the interaction intense, the effort and success of each team member is known to other teammates. Such knowledge allows the group to reward each team member for his or her contribution to the team goal, and this is what seems to happen.

Turn Schools into All Day Learning Centers

Schools should remain open after the end of the regular school day and a full range of remedial and enrichment programs and extra curricular activities and interscholastic sports should be offered.

Keep the Schools Open During the Summer

Longitudinal studies of learning have found that the pace of learning slows considerably during the summer and that disadvantaged students especially lose ground during the summer months (Heyns 1987). Experimental evaluations of the Summer Training and Employment Program (STEP), a program for disadvantaged youth that combines a part-time summer job with about 90 hours of remediation, has found that adding the remediation to the summer job results in gains in academic achievement of .5 grade level equivalents (Corporation for Public Private Ventures 1988). It would appear that summer programs targeted on educationally and economically disadvantaged children are likely to have high payoffs.

A Massive Dose of Mastery Learning

Students who are not learning at the desired rate should be required to commit additional time to the task after school and during the summer. At the beginning of the school year school personnel would meet with the student and his or her parents to set goals. Students who are not performing at grade level in core subjects and who do not make normal progress during the school year should be kept after school for tutoring and remedial instruction and required to attend summer school. Assessments of progress should be made at appropriate points during the school year to inform students of their progress and to enable those who are participating in remedial programs after school to demonstrate they are now progressing satisfactorily. Course grades and teacher evaluations would be a central part of the assessment process, but there should be an external yardstick as well. The external yardstick might be a competency check list, a mastery test keyed to the textbook, or an exam specified by the state, the school or collectively by the teachers in the that grade level or department. The reason for the external yardstick is that it helps insure that students perceive the standard to be absolute rather than relative to others in the class, and it helps create a communality of interest between teacher and student. Teachers need to be perceived as helping the student achieve the student's goals not as judges meting out punishment. Since students will want to avoid being required to get remedial instruction after school and during the summer, this will be a powerful incentive for them to devote themselves to their studies.

Honoring Academic Achievement

Schools should strengthen their awards and honors system for academic and non-academic accomplishments. The medals, trophies, and school letters awarded in interscholastic athletics are a powerful motivator of achievement on the playing field. Academic pursuits need a similar system of reinforcement. Public school systems in Tulsa and a number of other cities have started awarding school letters for academic achievements. Awards and honors systems should be designed so that almost every student can receive at least one award or honor before graduation if he or she makes the effort. Outstanding academic performance (e.g., high grades or high test scores) would not have to be the only way of defining excellence. Awards could be given for significant improvements in academic performance since the previous year or since the beginning of the school year, for public service in or out of school, for perfect attendance records, and for student of the week (criteria could vary weekly). The standard for making an award should be criterion referenced: if greater numbers achieve the standard of excellence, more awards should be given.

A prominent place in the school should be reserved for bulletin boards where pictures of the most recent winners and reasons for their receiving recognition could be posted. Another form of recognition could be displays of student work: art, science, social studies, vocational education projects, and so forth. Periodically, the parents of the most recent award winners and sponsoring teachers should be invited to an evening assembly at which time the principal would award the students the certificate or plaque recognizing their accomplishments.

4.5 Summary

The key to motivation is recognizing and rewarding learning effort and achievement. Employers should start demanding high school transcripts and give academic achievement (particularly achievement in math and science) much greater weight when hiring. Business and industry should communicate this policy to schools, parents, and students. High school graduates should not be relegated to sales clerk jobs simply because of their age. Like their peers in Europe, Canada, and Japan, they should be allowed to compete for really attractive jobs on the basis of the knowledge and skills they have gained in high school.

Schools should reduce the disincentives to studying. Cooperative learning such as Student Teams-Achievement Divisions would encourage the peer group to reward learning effort by having students study in small heterogeneous groups and structuring competition to be between evenly matched teams and rather than unevenly matched individuals (Slavin, 1983). Criterion referenced competency profiles should be available for students, describing and certifying academic, vocational, artistic and extra-curricular accomplishments. Frequent awards ceremonies should recognize individual effort to attain learning goals, so that every student who works hard is recognized sometime in the school year. Those seeking work will be able to use their grades as well as competency profiles and awards as aids in securing employment.

Although the problems are less dramatic for the college-bound, parallel efforts should be made to increase incentives for them. College counselors and admission officers should deemphasize SATs, rank in class and GPA and substitute criterion-referenced systems of assessment such as AP exams in which the student is not engaged in zero-sum competition with classmates. Although paper and pencil achievement tests tied to the state's curriculum should be part of this assessment, the measures of achievement available must be broadened to include accomplishments such as essay writing, conversing in a foreign language, conducting laboratory experiments, repairing a car, and so forth.

V. EFFECTS OF PROPOSED REFORMS ON UNDER-REPRESENTED MINORITIES

What impact would the reforms just described have upon the labor market chances of minority youth? Since minority students receive lower scores on achievement tests, it might appear at first glance that greater emphasis on academic achievement will inevitably reduce their access to good colleges and to good jobs? This is not the case, however, for four reasons.

If academic achievement becomes a more important basis for selecting students and workers, something else becomes less important. The minority access consequences of greater emphasis on academic achievement depends on the nature of the criterion that becomes deemphasized. NCAA's Proposition 42 reduces the access of minority students to athletic scholarships because it substitutes a criterion on which minority students do poorly -- SAT tests -- for a criterion on which minority youth do very well -- athletic ability. Substituting academic achievement tests for aptitude tests in college admissions decisions, however, has the opposite effect. It improves minority access because minority-majority differentials tend to be smaller (in standard deviation units) on achievement tests (e.g., the NAEP reading and math tests) than on aptitude tests (e.g., the SAT). Greater emphasis on academic achievement improves the access of women to high level professional, technical, craft and managerial jobs because it substitutes a criterion on which women do well for criteria -- sex stereotyped beliefs about which jobs are appropriate for women -- which have excluded women in the past. For the same reason, greater emphasis on academic achievement when selecting young workers will not reduce minority access to jobs if it substitutes for other criteria which also place minority youth at a serious disadvantage. In October 1986 only 42 percent of spring 1986 black high school graduates not attending college had jobs. This alarming outcome is the result of a system in which there is almost no signaling of high school achievement to the labor market. One reason why minority youth do poorly in the labor market is that most of the criteria now used to make selections -- previous work experience, recommendations from previous employers, having family friends or relatives at the firm, proximity of one's residence to stores which hire youth, performance in interviews, and prejudices and stereotypes -- work against them. These criteria will diminish in importance as academic achievement becomes more important. There is no way of knowing whether the net result of these shifts will help or hinder minority youth seeking employment. The employment circumstances of black non-college bound youth are now so poor (the median income of black males 20 to 24 years old was $6322 in 1987, 37 percent below the median for comparable whites), it is hard to imagine how improved signaling of academic achievement could make things worse. In some models of the labor market the relative position of minority workers improves when academic achievement is better signaled.[8]

The second way in which minority youth may benefit from improved signaling of school achievements is that it will give recent high school graduates, both black and white, the first real chance to compete for high-wage high-training content jobs. At present they are frozen out of these jobs because primary labor market employers do not consider job applicants who lack a lengthy track record. Extensive work experience is considered essential partly because it contributes to productivity but also because it produces signals of competence and reliability that employers use to identify who is most qualified. Recent high school graduates have no such record and information on the student's high school performance is not available, so the entire graduating class appears to employers as one undifferentiated mass of unskilled and undisciplined workers. A supervisor at New York Life Insurance commented on television "When kids come out of high school, they think the world owes them a living" (PBS, March 27, 1989). Surely this generalization does not apply to every graduate, but the students who are disciplined and academically well prepared currently have no way of signaling this fact to employers. Competency portfolios with verified information about high school accomplishments would change this unfair situation and give students a way of demonstrating that the stereotype does not apply to them. Young people from minority backgrounds must overcome even more virulent stereotypes and they often lack a network of adult contacts who can provide job leads and references. By helping them overcome these barriers to employment, competency portfolios are of particular help to minority youth.

It is easy to see how the youth who obtain primary labor market jobs benefit from better signaling of academic achievement, but those who remain in the secondary labor market also benefit. This is because the supply of workers to the secondary labor market will fall and this will cause an increase in wage rates and a decline in unemployment for those who remain behind.

The third way in which these proposals will assist minority students is by encouraging greater numbers of firms to undertake affirmative action recruitment. The creation of a competency portfolio data bank searchable by employers seeking qualified minority job candidates greatly reduces the costs and increases the effectiveness of affirmative action programs. Affirmative action has significantly improved minority representation in managerial and professional occupations and contributed to a substantial increase in the payoff to schooling for blacks (Freeman 1981). One of the reasons why it has been particularly effective in this labor market is that college reputations, transcripts and placement offices provide brokering and pre-screening services which significantly lower the costs of recruiting minority job candidates. The competency portfolio data bank would extend low cost brokering and pre-screening services to the labor market for high school graduates. The creation of such a data bank would almost certainly generate a great deal of competition for the more qualified minority youth in the portfolio bank.[9]

The final and most important way in which these reforms will benefit minority youth is by bringing about improvements in academic achievement and productivity on the job at a time of highest demand for labor. Jobs will be available. Student incentives to study hard, parental incentives to demand a better education and teacher incentives to both give more and expect more from students will all be strengthened. Because of the way affirmative action is likely to interact with a competency profile data bank, the rewards for learning will become particularly strong for minority students. Learning will improve and the gap between minority and majority achievement will diminish. Society has been making considerable progress in closing achievement gaps between minority and majority students (see Table 2 and 3). In the early National Assessment of Educational Progress assessment's black high school seniors born between 1952 and 1957 were 6.7 grade level equivalents behind their white counterparts in science proficiency, 4 grade level equivalents behind in mathematics and 5.3 grade level equivalents behind in reading. The most recent National Assessment data for 1986 reveals that for blacks born in 1969, the gap has been cut to 5.6 grade level equivalents in science, 2.9 grade level equivalents in math and 2.6 grade level equivalents in reading (NAEP 1988, 1989). Koretz's (1986 Appendix E) analysis of data from state testing programs supports the NAEP findings. Hispanic students are also closing the achievement gap. These positive trends suggest that despite their limited funding, Head Start, Title I and other compensatory interventions have had an impact. The schools attended by most minority students are still clearly inferior to those attended by white students, so further reductions in the school quality differentials can be expected to produce further reductions in academic achievement differentials.

The students of Jamie Escalante's Advanced Placement calculus classes have demonstrated to the nation what minority students from economically disadvantaged backgrounds can accomplish. The James A. Garfield High School student body is predominantly disadvantaged minorities; yet it accounts for 17 percent of all Mexican Americans taking the AP calculus exam and 32 percent of all Mexican Americans who pass the more difficult BC form of the test (Berlin and Sum 1988). Escalante's students accomplished what many had thought impossible. There is no secret about how they did it; they worked extremely hard. Every student in the class signed a contract committing themselves to doing a hugh amount of homework and to coming to school early and staying late. They lived up to the commitment. What is so unique about Jamie Escalante is that he believed that minority kids from disadvantaged backgrounds could be persuaded to study just as hard as academic track students in Japan, Finland and England and that if they did, they would achieve at the same level. He cast aside the zero-sum competition of grades and rank in class and set for his students a very difficult externally defined goal. He persuaded them that they could succeed and that there was great honor in taking on the challenge. The success at Garfield High is replicable. There are tens of thousands of teachers and hundreds of thousands of students willing to work as hard as Escalante and his students. To release this energy, excellence must be defined by an external standard, small teams of students and teachers must be given responsibility for achieving it and they must be honored and rewarded when they succeed. If we create such a system, we will be astonished by the results.

Postlude

Institutional arrangements of schools and the labor market have profound effects on the incentives faced by students, teachers, parents and school administrators. The passivity and inattention of students, the low morale of teachers, the defeat of so many school levies and low rankings on international measures of achievement are all logical outcomes of institutional arrangements which weaken student incentives to study and parental incentives to fund a high quality education. Only with an effective system of rewards within schools and in the labor market can we hope to overcome the pervasive apathy and achieve excellence.

FIGURE 1

ALGEBRA RESULTS FOR 17-YEAR-OLDS

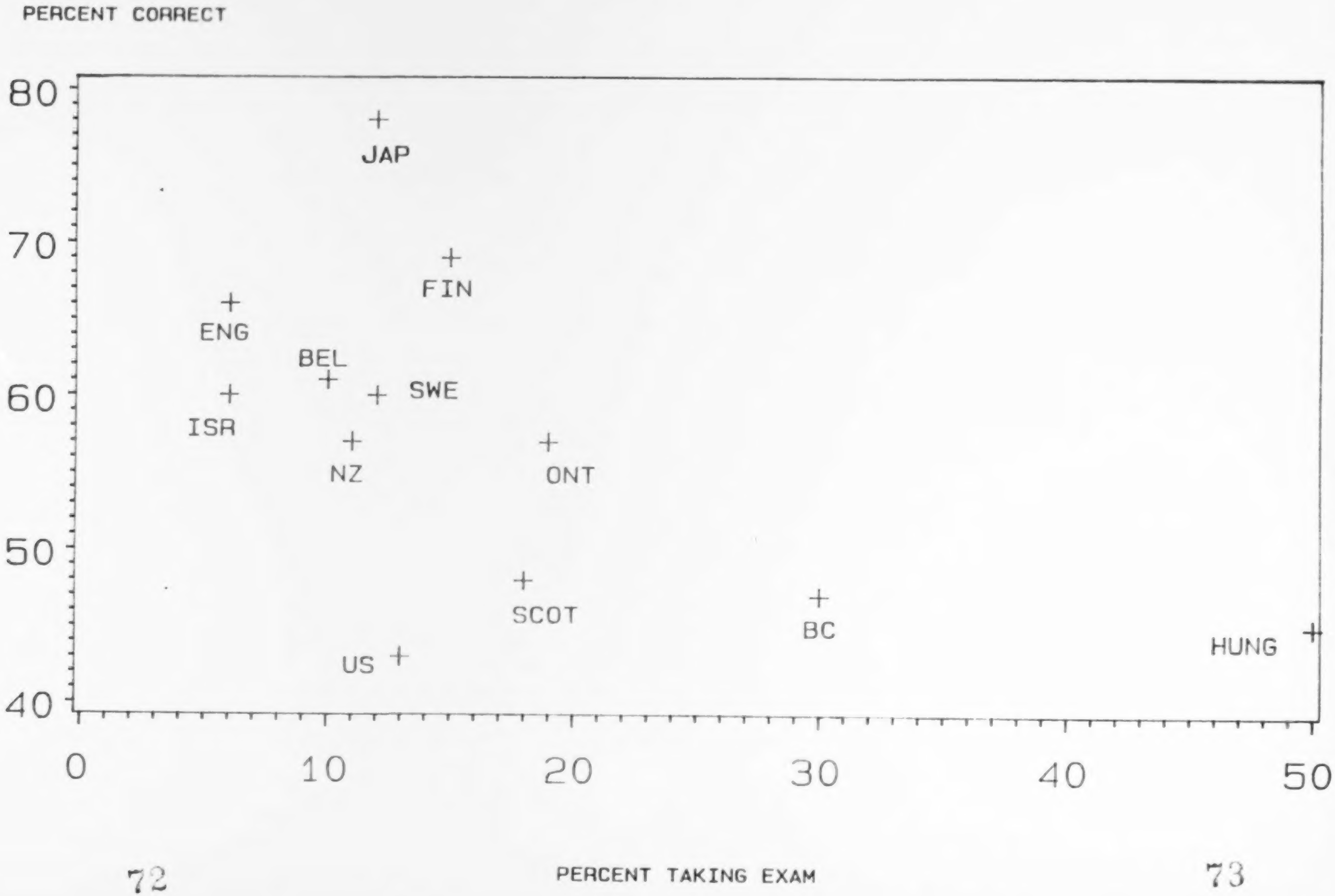


FIGURE 2

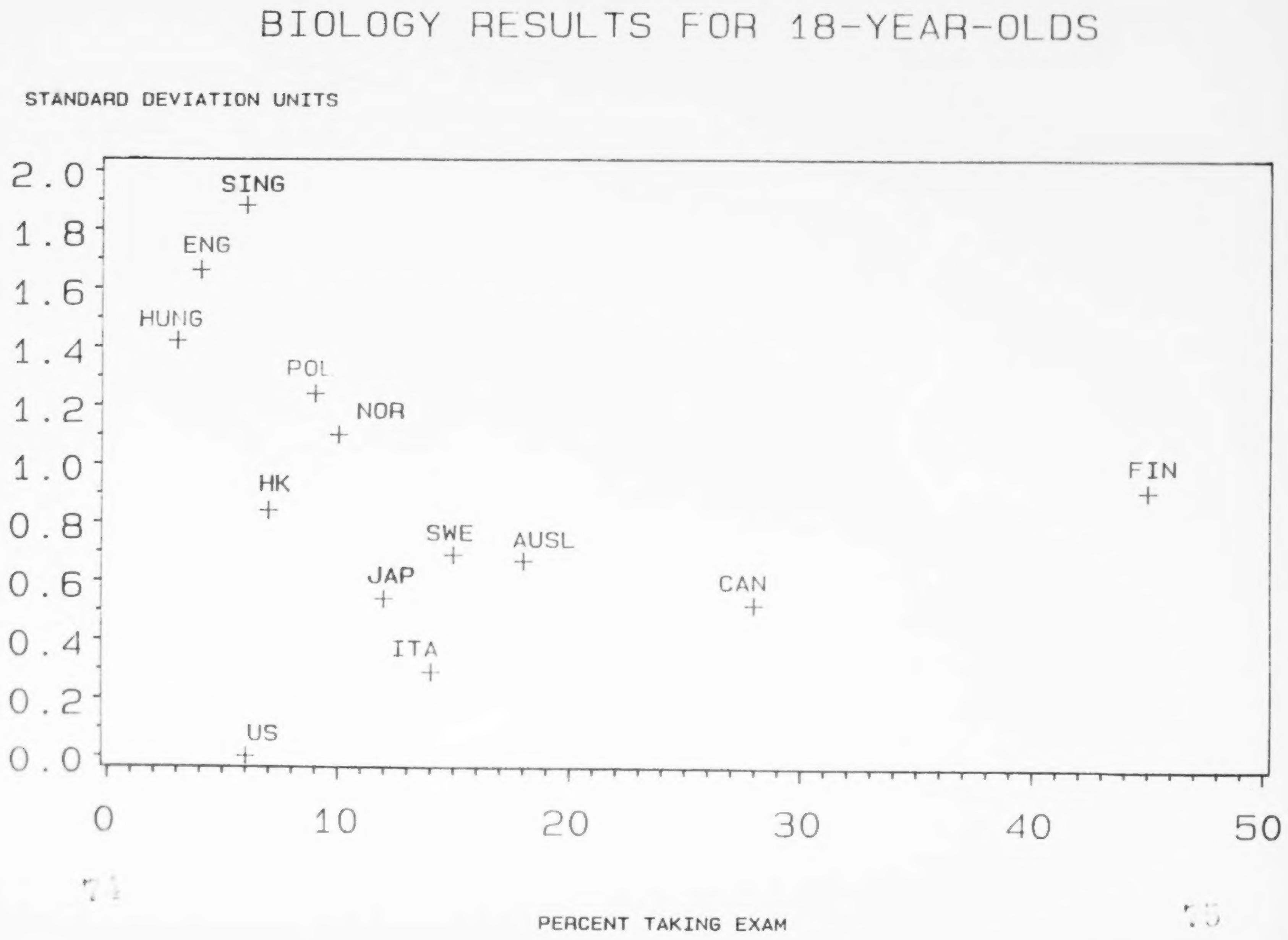

BIOLOGY RESULTS FOR 18-YEAR-OLDS
STANDARD DEVIATION UNITS
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
SING
ENG
HUNG
POL
NOR
HK
SWE
AUSL
JAP
CAN
ITA
US
FIN
0
10
20
30
40
50
PERCENT TAKING EXAM

FIGURE 3

CHEMISTRY RESULTS FOR 18-YEAR-OLDS

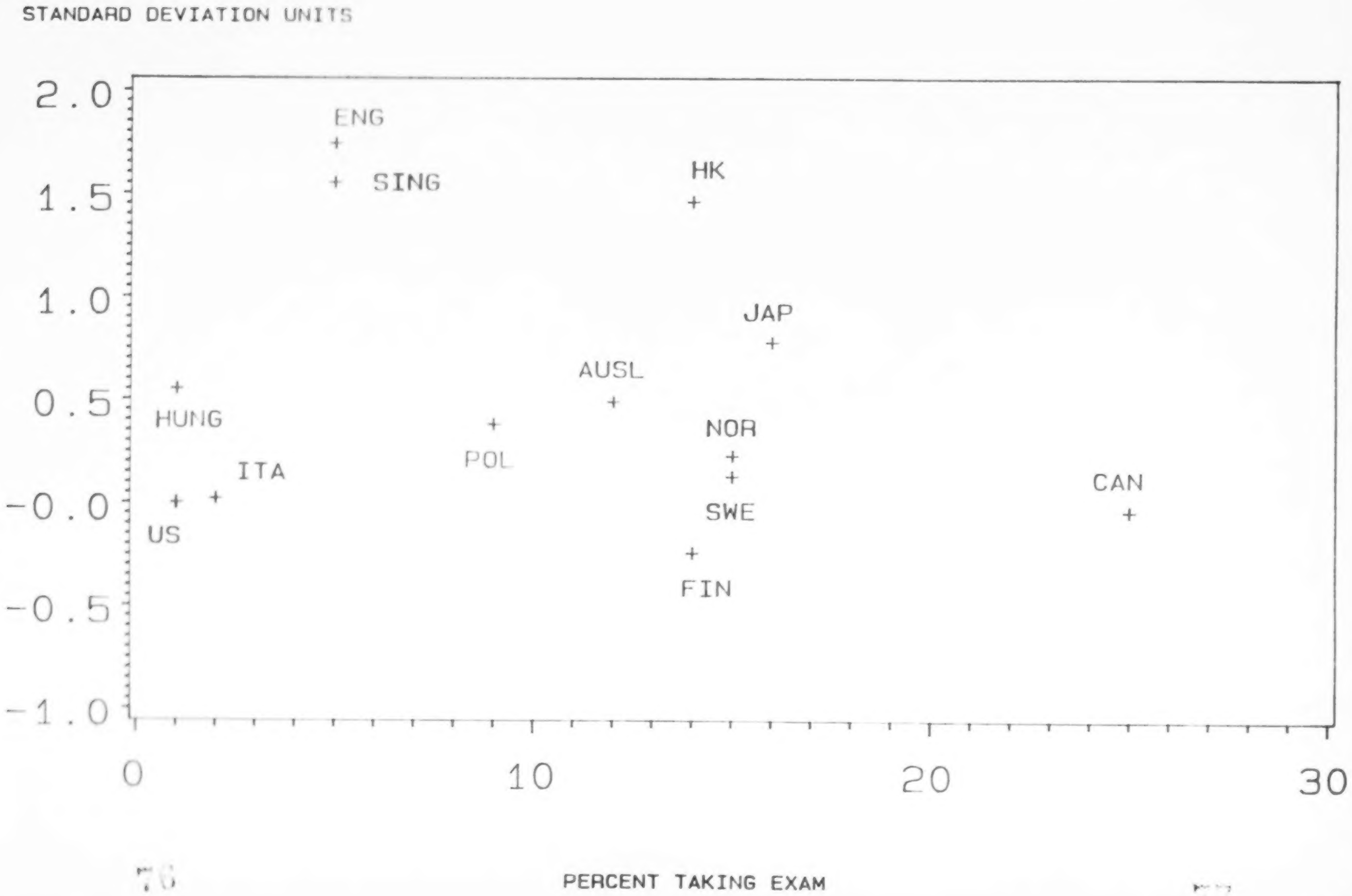


FIGURE 4

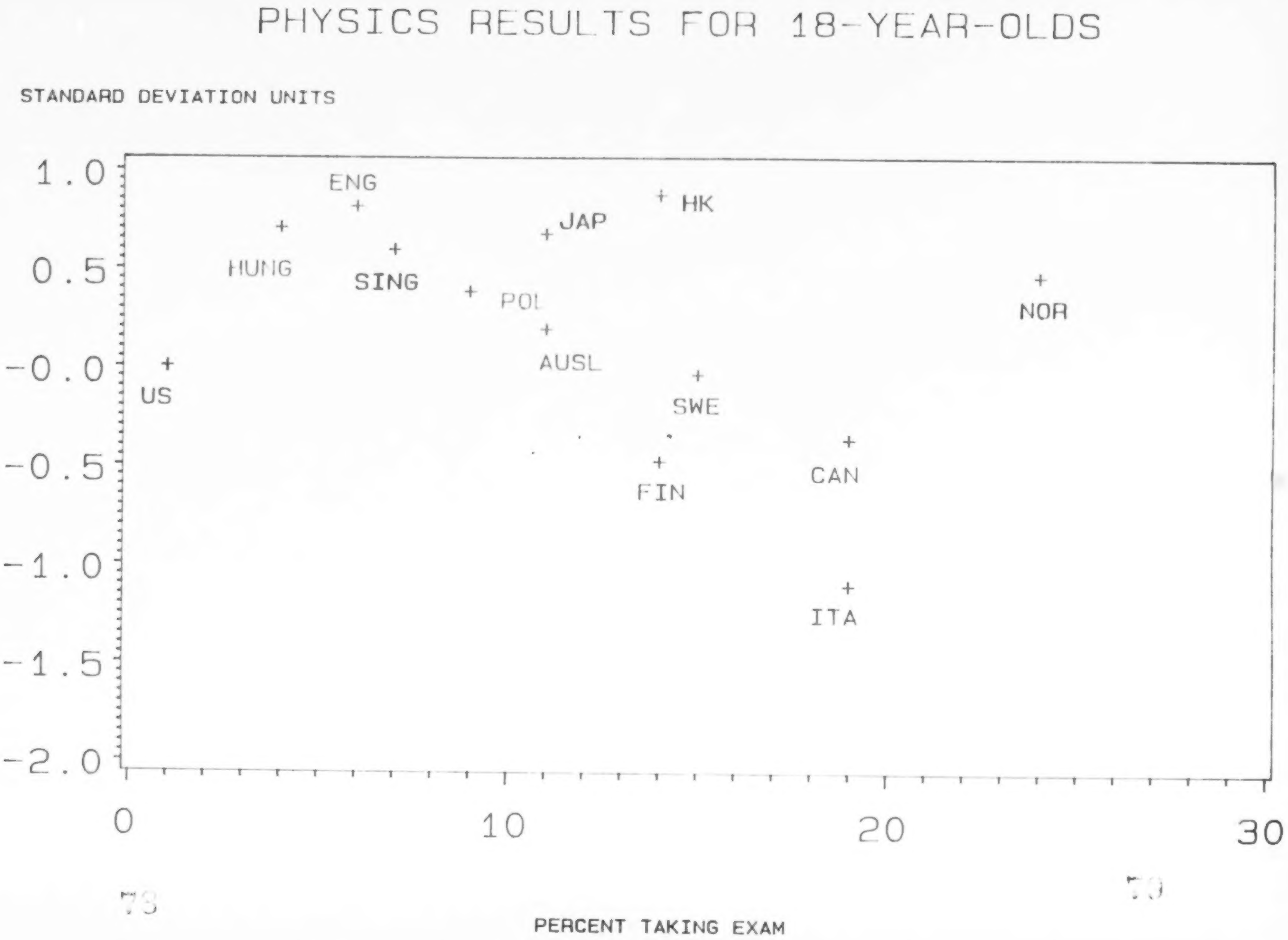
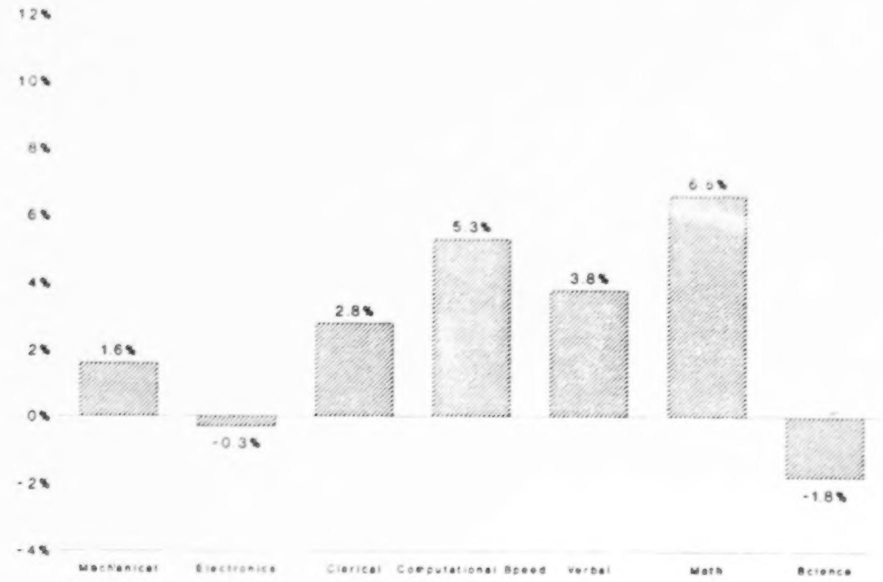
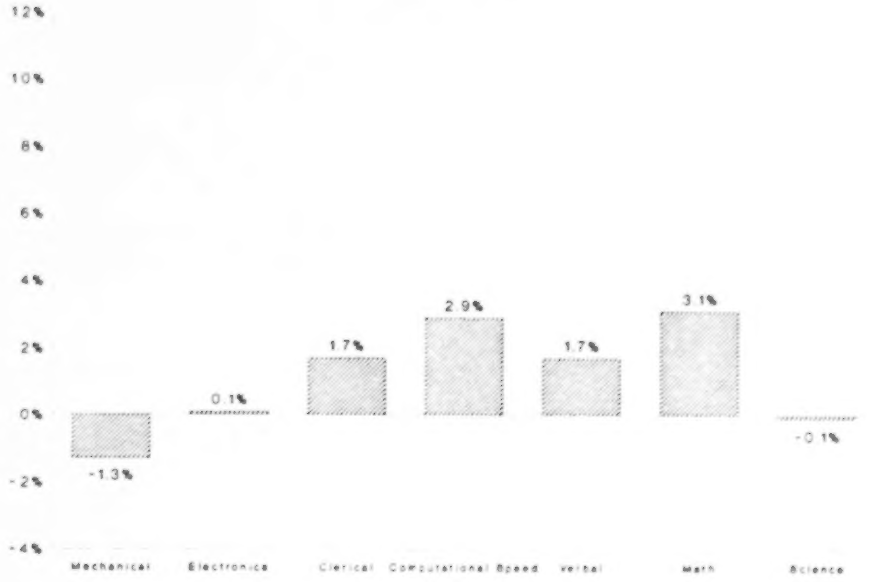

PHYSICS RESULTS FOR 18-YEAR-OLDS
STANDARD DEVIATION UNITS
1.0
0.5
-0.0
-0.5
-1.0
-1.5
-2.0
ENG
HK
JAP
HUNG
SING
POL
NOR
AUSL
US
SWE
CAN
FIN
ITA
0
10
20
30
PERCENT TAKING EXAM

FIGURE 5



Effect of Competencies on Earnings, 1984-1985 Young Women

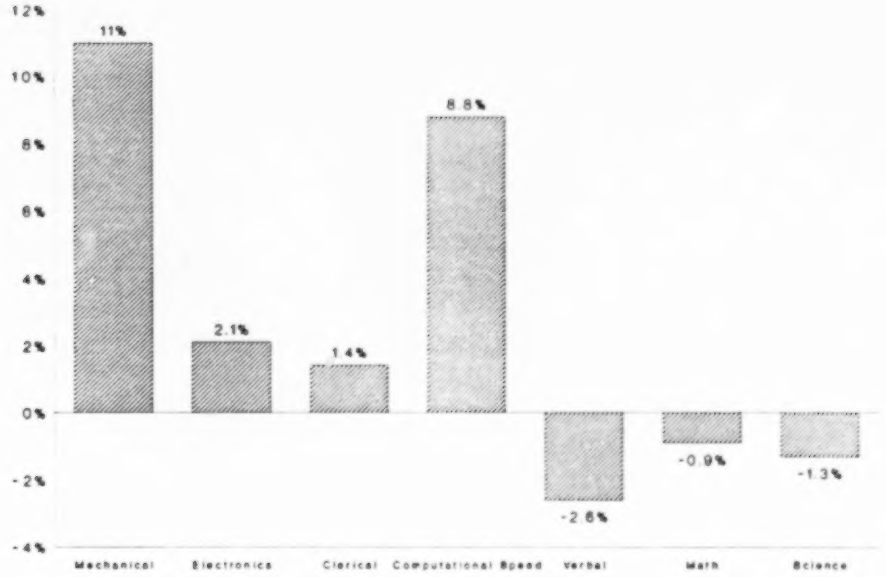


Effect of Competencies on Wage Rates, 1983-1986 Young Women

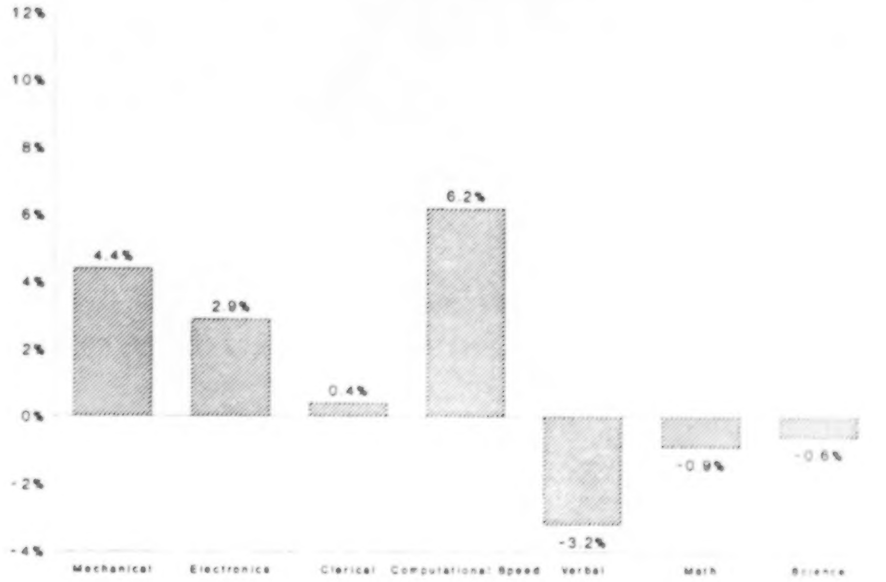
Source: Analysis of NLS Youth data. The figure reports the effects of a one population standard deviation increase in Armed Services Vocational Aptitude Battery subtest while controlling for schooling, school attendance, age, work experience, region, SMSA residence, and ethnicity.

FIGURE 6

Effect of Competencies
on Earnings, 1984-1985
Young Men



Effect of Competencies
on Wage Rates, 1983-1986
Young Men



Source: Analysis of NLS Youth data. The figure reports the effects of a one population standard deviation increase in Armed Services Vocational Aptitude Battery subtest while controlling for schooling, school attendance, age, work experience, region, SMSA residence, and ethnicity.

Figure 7

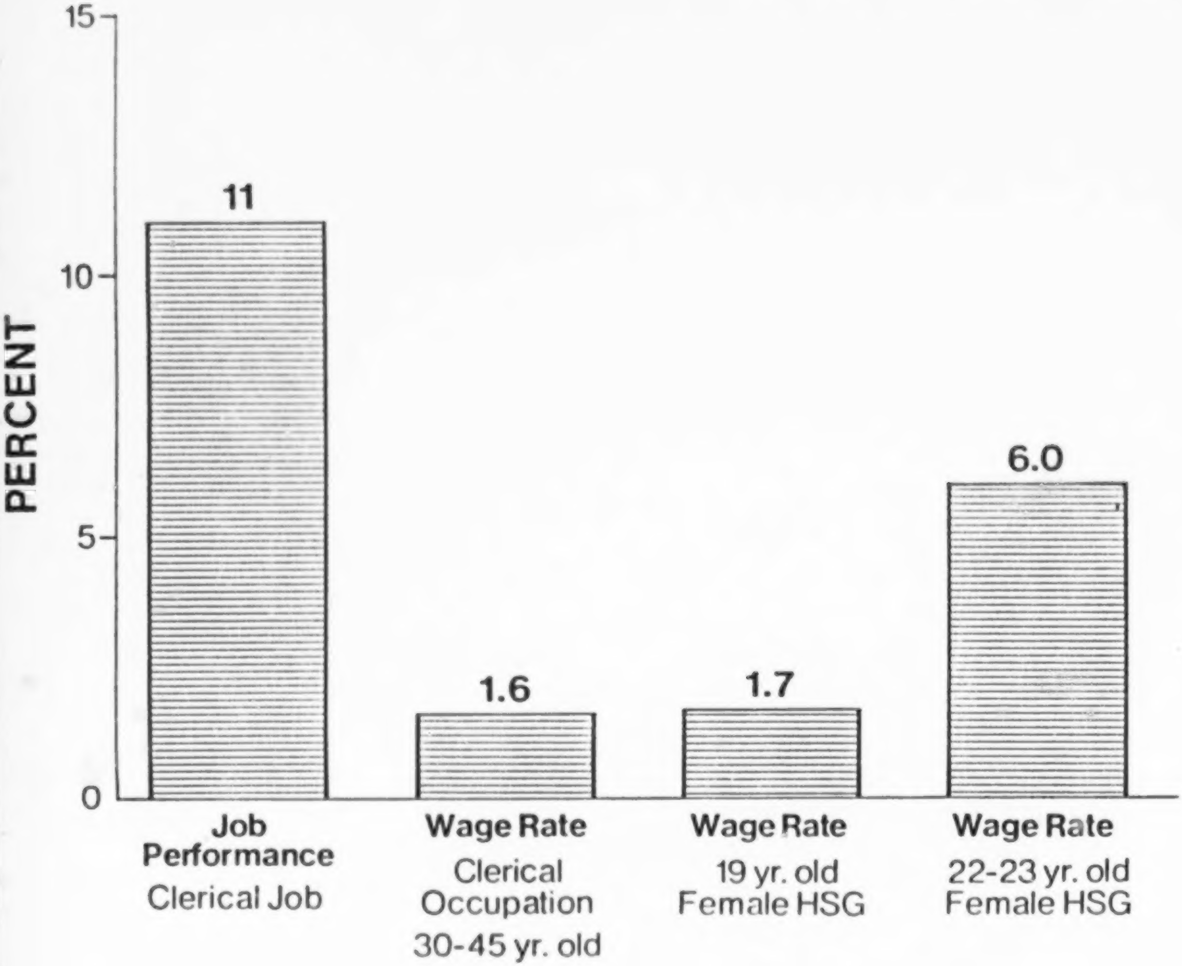

15
10
5
0
PERCENT
11
1.6
1.7
6.0
Job Performance Clerical Job
Wage Rate Clerical Occupation 30-45 yr. old
Wage Rate 19 yr. old Female HSG
Wage Rate 22-23 yr. old Female HSG

Exhibit 1

CURRICULUM VITAE

NAME:

ADDRESS:

DATE OF BIRTH: AGE:

NATIONALITY:

TELEPHONE NO:

EDUCATIONAL DETAILS

Primary School

Post Primary

Secretarial Course

Office Procedures Course

EXAMINATIONS

	Intermediate Certificate		1985
SUBJECTS	English	B - L.C.	
	Irish	C - L.C.	
	Maths	B - L.C.	
	Science	C	
	Geography	C	
	History	C	
	Home Economics	D	
	Leaving Certificate		1987
SUBJECTS	English	D - L.C.	
	Irish	C - L.C.	
	Maths	C - L.C.	
	Biology	C - L.C.	
	Geography	C - L.C.	
	French	D - L.C.	
	Home Economics	B - L.C.	

Exhibit 2

CURRICULUM VITAE

Name ;

Address ;

Date of Birth ;

Place of Birth ;

Nationality ;

Marital Status ;

Occupation ;

Father's name ;

Occupation ;

EDUCATION :

August 1980 - June 1985.
(All five years were spent learning through Irish.)

U.C.D.

QUALIFICATIONS :

Subject:	Intermediate Cert. (June 1983)	Leaving Cert. (June 1985)
Irish	C (H)	C (H)
English	D (H)	C (H)
Mathematics	B (H)	A (P)
French	D	C (P)
German	D	---
Science	A	---
Chemistry	---	C (H)
Physics	---	C (H)
History	B	C (H)
Geography	B	---

Table 1

Effect of Academic Achievement on the Wage Rates of High School Graduates

Study and Data Set	Date of Graduation	Age	Achievement Measures	Percent Change in Wage Rate Male	Percent Change in Wage Rate Female
Wage Rates					
Kang & Bishop (1985)	1980	19	Test-Math,Voc,Read	-1.9	-.5
			GPA in Grade 12	.6	2.2
Gardner (1983) NLS Youth	1976-1982	19-24	AFQT	4.8	4.8
Daymont & Rumberger NLS Youth (1982)	1976-1979	19-21	GPA in Grade 9	.3	2.7
Meyer (1982) (Weekly earnings) Class of 1972	1972	19	Class Rank Grade 12	0.0	2.5
			Test Composite	1.2	2.2
Earnings					
Hause (1975) Project Talent (white)	1961	19	IQ, Test-Math	-3.7	--
		23	IQ, Test-Math	6.1	--

The table reports the percentage response of the wage rate or earnings to a one standard deviation improvement in a measure of academic achievement. For high school seniors a one standard deviation differential on an achievement test is about equal to 3.5 grade level equivalents or 110 points on the Verbal SAT. For GPA, one standard deviation is about .7 when C's = 2.0, B's = 3.0 and A's = 4.0.

Table 2

Racial Gaps in Science, Math and Reading Proficiency

[In Grade Equivalent Units]

Test Date

	1969	1971	1973	1975	1978	1980	1982	1984	1986
Science									
At Age 17	6.7	--	6.6	--	7.1[a]	--	7.2	--	5.6
At Age 13	6.1	--	6.6	--	6.0[a]	--	5.0	--	4.1
Math									
At Age 17	--	--	4.0	--	3.2	--	3.2	--	2.9
At Age 13	--	--	4.6	--	4.2	--	3.4	--	2.4
Reading									
At Age 17	--	5.3	--	5.0	--	4.8	--	3.3	2.6
At Age 13	--	4.2	--	3.9	--	3.3	--	2.8	2.3

Source: National Assessment of Educational Progress, Crossroads in American Education. February 1989, Figure 2A. In science the difference between 17 year olds and 9 year olds was 64.2 points on the NAEP scale, so a grade equivalent unit was defined as 8.025 on the NAEP scale. The Mathematics Report Card. June 1988, Figure 1.2. The difference between 17 year olds and 9 year olds was 80.3 points on the NAEP scale. Consequently, a grade equivalent unit was defined as 10 points on the NAEP scale. The Reading Report Card. 1985, Data Appendix and Who Reads Best?, February 1988, Table 1.1. The difference between the scores of 17 year olds and 9 year olds was 75 points on the NAEP scale used in the report covering 1971 through 1984 and 18 on the scale used in the report on the 1986 assessment. Consequently, a grade equivalent unit was defined as 9.375 points on the NAEP scale used in the 1971-84 report and 2.25 points on the scale used in the report on the 1986 assessment.

[a] The Science NAEP was administered in 1977 not 1978.

Table 3
Gap between White and Hispanic Students in Science, Math and Reading Proficiency

[In Grade Equivalent Units]

	Test Date								
	1969	1971	1973	1975	1978	1980	1982	1984	1986
Science									
At Age 17	--	--	--	--	4.4[a]	--	5.6	--	4.7
At Age 13	--	--	--	--	5.4[a]	--	4.0	--	4.1
Math									
At Age 17	--	--	3.3	--	3.0	--	2.7	--	2.4
At Age 13	--	--	3.5	--	3.4	--	2.2	--	1.9
Reading									
At Age 17	--	--	--	3.8	--	3.1	--	2.8	--
At Age 13	--	--	--	3.2	--	2.9	--	2.6	--

Source: National Assessment of Educational Progress, Crossroads in American Education. February 1989, Figure 2A. In science the difference between 17 year olds and 9 year olds was 64.2 points on the NAEP scale, so a grade equivalent unit was defined as 8.025 on the NAEP scale. The Mathematics Report Card. June 1988, Figure 1.2. The difference between 17 year olds and 9 year olds was 80.3 points on the NAEP scale. Consequently, a grade equivalent unit was defined as 10 points on the NAEP scale. The Reading Report Card. 1985, Data Appendix and Who Reads Best?, February 1988, Table 1.1. The difference between the scores of 17 year olds and 9 year olds was 75 points on the NAEP scale used in the report covering 1971 through 1984 and 18 on the scale used in the report on the 1986 assessment. Consequently, a grade equivalent unit was defined as 9.375 points on the NAEP scale used in the 1971-84 report and 2.25 points on the scale used in the report on the 1986 assessment.

[a] The Science NAEP was administered in 1977 not 1978.

NOTES

1. At the post secondary level, university reputations are based on the rigor of the program and students compete for the right to pay $15,000 a year to attend and study for long hours. Competition is keen for admission to selective universities because a degree from one of these colleges is handsomely rewarded by the labor market (Solomon 1975; Wise 1978). Comparably rigorous private secondary schools have a much smaller share of their market. The reason for their small market share is that they provide only modest help in the competition for admission to the best colleges. The early curriculum specific college admissions tests were abolished in favor of aptitude tests partly to reduce the advantage that students at private high schools had under the old system. Attending such schools probably has little effect on SAT scores and almost certainly results in a lower GPA.

2. The survey was of a stratified random sample of the NFIB membership. Larger firms had a significantly higher probability of being selected for the study. The response rate to the mail survey was 20 percent and the number of usable responses was 2014.

3. These tests measure the competencies that are the prime objectives of schooling. School attendance has been shown to improve performance on these tests (Lorge, 1945). Between World War I and World War II, the average IQ test scores of literate white army draftees increased by 11 points (Bishop 1989).

4. Studies that measure output for different workers in the same job at the same firm, using physical output as a criterion, have found that the standard deviation of output varies with job complexity and averages about .164 in routine clerical jobs and .278 in clerical jobs with decision making responsibilities (Hunter, Schmidt & Judiesch 1988). Because there are fixed costs to employing an individual (facilities, equipment, light, heat and overhead functions such as hiring and payrolling), the coefficient of variation of marginal products of individuals is assumed to be 1.5 times the coefficient of variation of productivity. Because about 2/3rds of clerical jobs can be classified as routine, the coefficient of variation of marginal productivity for clerical jobs is 30 percent [1.5*(.33*.278+.67*.164)]. A .5 validity for general mental ability then implies that an academic achievement differential between two individuals of one standard deviation (in a distribution of high school graduates) is associated with a productivity differential in the job of about 11 percent (.5*.74*30%). The ratio of the high school graduate test score standard deviation to the population standard deviation is assumed to be .74. This issue is more thoroughly discussed in Bishop (1987b).

5. Most of the published studies of the validity of grades probably used information that had been collected by the firm when hiring

decisions were being made. Consequently, most of the validity coefficients reported for grades are probably negatively biased by the selection effects so the true validity of GPA than is generally thought.

6. Germany is somewhat exceptional in giving the teacher some influence over the questions asked and their grading. Ingenkamp (1969) has described the system. "The actual responsibility for setting the questions varies in the different Federal States. In some the subjects are set by a central committee for all schools; in others the Gymnasium submits suggestions, from which the representative of the State School Authority, who supervises the whole examination, chooses the subjects to be set. The assessment of the candidates work is likewise more or less centralized. Usually the examination work is scrutinized and marks assessed by the specialist teacher at the Gymnasium, then submitted to another specialist who acts as a co-assessor and to all the other teachers of the Abitur class for their opinion, and is finally sent to the representative of the State School Authority for confirmation.(p. 144)"

7. This proposal sounds radical but, in fact, is only a modest change from current practice at these selective colleges. A survey of college placement officials conducted by USA Today and interviews of officials at Cornell and SUNY Binghamton conducted for this report found that students were expected to take AP courses if they are offered and grade point averages were adjusted for the difficulty level of the courses taken. High school students and parents are generally unaware of this policy, however, and many have not factored it into their high school course selections. The announcement, therefore, has two effects: it informs students and parents of existing admissions policies and warns that come 1993 those seeking admission to selective colleges will not necessarily be held harmless if a local high school does not offer AP courses. This announcement will generate strong political pressure on principals and school boards to expand their AP program and allow additional students to take AP courses. Students at schools not offering AP might be offered other ways of demonstrating college level proficiency such as an AP independent study option, taking courses during the summer at a local college or high scores on the afternoon subject matter SAT exams or New York State Regents exams. Exceptions would have to be made for students from under-represented minorities, foreign students and in other individual cases but exceptions should not become the rule.

8. One important cause of these unfortunate labor market outcomes is the belief that young people in general and minority youth in particular are likely to be less productive even when they appear equally qualified on paper. Acting on such beliefs is unlawful, but it would be naive to assume that the subjective assessments that generally determine hiring decisions are not affected by such

beliefs. Economists have shown that when there are no laws to the contrary, it is rational for a firm to engage in statistical discrimination -- in other words, to include age, race and gender as one of their selection criterions if these traits help explain job performance when other qualifications (e.g., education and work experience) are held constant. How will an employer that evaluates job applicants using the statistical discrimination model respond to being allowed for the first time to use academic achievement as a selection criterion? The employer will recalculate the job performance prediction model with the new academic achievement variables included and selections will be based on the new model. The average predicted job performance of minority job candidates will not change. The tendency of achievement deficits to lower the predicted job performance of minority candidates will be exactly offset by a reduction in the negative coefficient on the black and Hispanic dummy variables. The new information increases the variance explained by the job performance model. Minority representation at the firm will tend to rise if the variance of achievement is greater among minority applicants and/or the effect of academic achievement on job performance is greater for minority applicants (Aigner and Cain, 1977).

9. Colleges and universities have demonstrated that it is possible to use academic achievement as a primary selection mechanism and yet achieve significant minority representation through intensive affirmative action programs. This is the approach that should be taken if minority representation is at unsatisfactory levels. A direct attack on the problem is going to be much more effective than attacks on particular selection criteria.

REFERENCES

Aizner, Dennis and Gain, Glen. "Statistical Theories of Discrimination in the Labor Market" Industrial and Labor Relations Review, January, 1977.

Berlin, Gordon and Sum, Andrew. Toward a More Perfect Union: Basic Skills, Poor Families, and Our Economic Future. Occasional Paper # 3, Ford Foundation Project on Social Welfare and the American Future, New York: Ford Foundation, 1988.

Bishop, John. Preparing Youth for Employment, Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1985.

Bishop, John. "The Recognition and Reward of Employee Performance." Journal of Labor Economics, Vol. 5, No. 4, pt 2, October 1987a, pp. S36-S56.

Bishop, John. "Information Externalities and the Social Payoff to Academic Achievement." Center for Advanced Human Resource Studies Working Paper # 87-06, Cornell University, Ithaca, New York, 1987b.

Bishop, John. "The Economics of Employment Testing." Center for Advanced Human Resource Studies, Working Paper #88-14, July, 1988a.

Bishop, John. "The Productivity Consequences of What is Learned in High School." Center for Advanced Human Resource Studies Working Paper # 88-18, Cornell University, Ithaca, New York, 1988b.

Bishop, John. "Is the Test Score Decline Responsible for the Productivity Growth Decline." American Economic Review, Vol. 79, no. 1, March 1989.

Bishop, John and Griffin, Kelly. Recruitment, Training and Skills of Small Business Employees, (National Federation of Independent Business Foundation, Washington, DC, forthcoming).

Cain, Glen and Goldberger, Arthur. "Public and Private Schools Revisited" Sociology of Education Vol 56, October 1983, pp. 208-218.

College Board. AP Yearbook 1988. Princeton, New Jersey: College Entrance Examination Board, 1988

Department of Labor. General Aptitude Test Battery Manual 1970, United States Department of Labor, Manpower Administration.

Dunbar, Stephen B. and Linn, Robert L. "Range Restriction Adjustments in the Prediction of Military Job Performance". Prepared for Committee on the Performance of Military Personnel, National Research Council / National Academy of Sciences. September 1986.

Fischer, C. W.,; Filby, N. N.; Marliave, R. S.; Cahen, L. S.; Dishaw, N. N.; Moore, J. E., and Berliner, D. C. Teaching Behaviors, Academic Learning Time and Student Achievement: Final Report of Phase III-B. Technical Report V-I. San Francisco: Far West Laboratories, 1978.

Flynn, James R. "The Mean IQ of Americans: Massive Gains 1932 to 1978." Psychological Bulletin, 1984, Vol. 95, No. 1, 29-51

Frederick, W. C. "The Use of Classroom Time in High Schools Above or Below the Median Reading Score." Urban Education 11, no. 4 (January 1977): 459-464.

Frederick, W.; Walberg, H.; and Rasher, S. "Time, Teacher Comments, and Achievement in Urban High Schools." Journal of Educational Research 73, no. 2 (November-December 1979): 63-65.

Freeman, Richard B. The Market for College-Trained Manpower: A Study in the Economics of Career Choice. Cambridge, MA: Harvard University Press, 1971.

Freeman, Richard. "A Cobweb Model of the Supply and Starting Salary of New Engineers." Industrial and Labor Relations Review, 29, January 1976a, pp. 236-248.

Freeman, Richard. The Overeducated American. New York: Academic Press, 1976.

Freeman, Richard. "Black Economic Progress after 1964: Who has Gained and Why." Studies in Labor Markets. edited by Sherwin Rosen, Chicago, IL: University of Chicago Press, 1981.

Friedman, Toby and Williams, E. Belvin. "Current Use of Tests for Employment." Ability Testing: Uses, Consequences, and Controversies, Part II: Documentation Section, edited by Alexandra K. Wigdor and Wendell R. Gardner. Washington, DC: National Academy Press, 1982, pg. 999-169.

Gardner, John A. Influence of High School Curriculum on Determinants of Labor Market Experience. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1982.

Ghiselli, Edwin E. "The Validity of Aptitude Tests in Personnel Selection." Personnel Psychology. 1973: 26, 461-477.

Goodlad, J. A Place Called School. New York: McGraw-Hill, 1983.

Griggs vs. Duke Power Company, 3 FEP 175 (1971).

Halasz, Ida M., and Behm, Karen S. "Time on Task Selected Vocational Education Classes." Columbus: The National Center for Research in Vocational Education, The Ohio State University, January 1983.

Hashimoto, M., and Yu, B. "Specific Capital, Employment and Wage Rigidity." Bell Journal of Economics, 11, no. 2, 1980: 536-549.

Hause, J. C. (1975) "Ability and schooling as determinants of lifetime earnings, or if you're so smart, why aren't you rich." In Education, Income, and Human Behavior, edited by F. T. Juster. New York: McGraw-Hill.

Heyns, Barbara. "Schooling and Cognitive Development: Is There a Season for Learning." Child Development, Vol. 58, No. 5, 1987, pp. 1151-1160.

Hollenbeck, K., and Smith B. The Influence of Applicants' Education and Skills on Employability Assessments by Employers. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1984.

Hotchkiss, Lawrence; Bishop, John H.; and Gardner, John. Effects of Individual and School Characteristics on Part-Time Work of High School Seniors. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1982.

Hunter, John. Test Validation for 12,000 Jobs: An Application of Job Classification and Validity Generalization Analysis to the General Aptitude Test Battery. Washington, DC: U.S. Employment Service, Department of Labor, 1983.

Hunter, J. E. and Hunter, R. F. "The Validity and Utility of Alternative Predictors of Job Performance." Psychological Bulletin, 96, no. 1, 1984, pp. 72-98.

Hunter, John E.; Crosson, James J. and Friedman, David H. "The Validity of the Armed Services Vocational Aptitude Battery (ASVAB) For Civilian and Military Job Performance," Department of Defense, Washington, D.C., August, 1985.

Hunter, John E.; Schmidt, Frank L. and Judiesch, Michael K. "Individual Differences in Output as a Function of Job Complexity." Department of Industrial Relations and Human Resources, University of Iowa, June 1988.

Ingenkamp, Karlheinz. "West Germany." Examinations, edited by Joseph Lauwerys and David Scanlon. The World Year Book of Education 1969, New York: Harcourt, Brace and World, 1969. pp. 140-145.

International Association for the Evaluation of Educational Achievement (IEA) *The Underachieving Curriculum, Assessing U.S. School Mathematics From an International Perspective*. Champaign, IL: Stipes Publishing Company, 1987.

International Association for the Evaluation of Educational Achievement (IEA) *Science Achievement in Seventeen Nations*, New York, Pergammon Press, 1988.

Jackson, G. A. and Weathersby, G. B. "Individual Demand for Higher Education." *Journal of Higher Education*, *46*, Nov./Dec. 1975, pp. 623-52.

Jencks, Christopher and Crouse, James. "Aptitude vs. Achievement: Should We Replace the SAT?" *The Public Interest*, 1982.

Kang, S. and Bishop, J. "The Impact of Curriculum on the Non-college Bound Youth's Labor Market Outcomes." In *High School Preparation for Employment*, 95-135. edited by Larry Hotchkiss, John Bishop and Suk Kang, Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1984.

Klein, M F.; Tyle, K. A.; and Wright, J. E. "A Study of Schooling Curriculum." *Phi Delta Kappan* 61, no. 4 (December 1979):244-248.

Klein, Roger; Spady, Richard; and Weiss, Andrew. *Factors Affecting the Output and Quit Propensities of Production Workers*. New York: Bell Laboratories and Columbia University, 1983.

Krista. Unpublished Paper for ILR 360, Cornell University, Ithaca, New York, 1987.

Koretz, Daniel, et al. *Trends in Educational Achievement*. Washington: Congressional Budget Office, 1986.

Lazear, Edward P. "Pay Equality and Industrial Politics", The Hoover Institution, Stanford University, April 1986.

Leestma, Robert, et al. "Japanese Education Today." A report from the U.S. Study of Education in Japan prepared by a special task force of the OERI Japan Study Team, 1987.

Longitudinal Survey of American Youth. "Data File User's Manual" Dekalb, IL: Public Opinion Laboratory, 1988.

Lorge, Irving. "Schooling Makes a Difference." *Teachers College Record*, 1945 Vol. 46 p. 483-492.

McDowell, Douglas and Dodge, Garen. "Employee Selection and Title VII of the Civil Rights Act: The Legal Debate Surrounding Selection Criteria, Validation and Affirmative Action." Paper prepared for the National Commission on Testing and Public Policy, November 1988.

Maier, Milton H. and Grafton, Frances C. Aptitude Composites for ASVAB 8, 9 and 10. Research Report 1308. U.S. Army Research Institute for Behavioral and Social Sciences, Alexandria, VA, May 1981.

Meyer, R. "Job Training in the Schools." In Job Training for Youth, edited by R. Taylor, H. Rosen, and F. Pratzner. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1982.

Meyer, Robert. "The Effects of High School Academic Reforms on Course Enrollments and Academic Skills Growth: Evaluation and New Directions for Reform." National Assessment of Vocational Education. October, 1988

Mueser, Peter and Maloney, Tim. "Cognitive Ability, Human Capital and Employer Screening: Reconciling Labor Market Behavior with Studies of Employee Productivity." Department of Economics, U. of Missouri-Columbia, June 1987.

National Assessment of Educational Progress. The Reading Report Card. Princeton, New Jersey: Educational Testing Service, 1985.

National Assessment of Educational Progress. Who Reads Best? Princeton, New Jersey: Educational Testing Service, 1988a.

National Assessment of Educational Progress. The Mathematics Report Card. Princeton, New Jersey: Educational Testing Service, 1988b.

National Assessment of Educational Progress. Crossroads in American Education. Princeton, New Jersey: Educational Testing Service, 1989.

Nielsen, A. C., Company (1987) Unpublished raw data.

Organization of Economic Cooperation and Development. "Living Conditions in OECD Countries: A Compendium of Social Indicators." Social Policy Studies No. 3. Paris, France: Organization for Economic Co-Operation and Development, 1986.

Rosenbaum, James and Kariya, Tobe. "Market and Institutional Mechanisms for the High School to Work Transition in Japan and the U.S." Paper given at the August 1987 American Sociological Association Meeting.

Schmidt, Frank. "The Problem of Group Differences in Ability Test Scores for Employment Selection." *Journal of Vocational Behavior*, Vol. 29, No. 3, December 1986. pp. 340-362.

Sizer, Theodore R. *Horace's Compromise: The Dilemma of the American High School*. The First Report from A Study of High Schools, co-sponsored by the National Association of Secondary School Principals and the Commission on Educational Issues of the National Association of Independent Schools, Boston: Houghton Mifflin, 1984.

Slavin, Robert. "When Does Cooperative Learning Increase Student Achievement?" *Psychological Bulletin*, Vol. 99, 1983, pp. 429-445.

Stevenson, Harold; Lee, Shin-Ying and Stigler, James W. "Mathematics Achievement of Chinese, Japanese & American Children." *Science*, Vol. 231, February 1986, pp. 693-699.

Stiglitz, Joseph E. "Risk Sharing and Incentives in Sharecropping." *Review of Economic Studies*, *61*, no. 2 April 1974, 219-256.

Taubman, P. and Wales, T. "Education as an Investment and a Screening Device." In *Education, Income, and Human Behavior*, edited by F. T. Juster. New York: McGraw-Hill, 1975.

Thorndike, R. L. *Personnel Selection: Test and Measurement Techniques*. New York: Wiley, 1949.

Weiss, Andrew. "High School Graduates: Performance and Wages" Bell Communications Research, Inc. Economics Discussion Paper # 3, 1985.

2. SCHOOLING FOR THE MODERN WORKPLACE

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2. SCHOOLING FOR THE MODERN WORKPLACE

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I. Introduction

The U.S. economy is undergoing fundamental changes. Foreign producers from both developed and developing economies are now competing with U.S. firms in domestic as well as international markets. U.S. firms are adopting new forms of production and employing new technologies more rapidly than in any recent period. Computers, robots, and other new technologies are now commonplace in American companies. The future promises even more changes.

Education is considered to be a key to maintaining economic progress and regaining competitiveness. The U.S. cannot compete with other countries on the basis of wages without creating drastic reductions in income and working conditions. Instead, it is argued, we must aim for much higher worker productivity that will merit higher wages while ensuring competitive prices and products. Such a strategy assumes a need for greater technological investment, streamlined organizational structures, and a focus on products which require a flexible and highly-trained workforce. A crucial part of this strategy is the formation of a supportive educational strategy both in the formal educational system and in job training by enterprises.

Of particular concern is the view that education must adapt to the use of new technologies. With the advent of technologies based upon micro-processors, new communications technologies, robotics, and biotechnology, it is argued that the labor force faces new workplace demands. All of these technologies make possible the emergence of new products and expansion of new occupations, while creating changes in work tasks in many of the more traditional occupations. Some features of the new technologies are so automated that it is possible to shift such production techniques easily to less-educated workforces in industrializing countries where lower wages and less demanding working conditions prevail. Indeed, the multinational enterprises are constantly choosing between industrialized and industrializing nations in terms of where to make productive investments. And, such enterprises continually weigh whether the education of their labor forces in the industrialized nations justifies the higher wages received by their workers.

The purpose of this paper is to identify the issues and assess the research literature about the role of schooling for the modern workplace. Most research literature focuses on past changes, whereas current policy is concerned about current and future changes and their implications for education. Therefore, we will review past research and attempt, where possible, to speculate where the future may depart from past trends.

As an organizing framework, we approach this topic through a labor market perspective. That is, we first examine the changing demand for educated labor in the current and future economy and then the changing supply of educated labor that will be available to meet that demand. Following that discussion, we look at the interaction of supply and demand and two conditions that can result: undereducation and overeducation. Finally, in the last two sections we discuss implications for further research and data and implications for policy.

II. The Changing Demand for Educated Labor

It is widely viewed that the demand for more educated workers is rising and will continue to rise in all of the industrialized societies. This view is usually premised on the dramatic shift from manufacturing to services that has characterized the industrialized economies as well as the increasing reliance on new technologies. In this section, we will discuss the demand for educated workers by focussing on some of its major determinants.

Demand for Goods and Services

First, the demand for educated labor is influenced by the level and composition of the demand for goods and services. Since the production of some goods and services requires more educated labor than the production of others, shifts in the demand for goods and services shifts from one sector of the economy to another will alter the demand for educated as well.

Historically, the U.S. has moved from an agricultural economy to goods-producing economy and most recently to a services-producing economy. This trend will continue as virtually all new jobs projected for the future economy coming from the services sector (Table 1). Each transition has increased the demand for educated labor because, on average, services-producing industries require higher education levels of their workers than goods-producing industries which, in turn, require more educated labor than agriculture. In 1980, for example, 30 percent of employees in goods-producing industries had less than 12 years of schooling, while only 11 percent had 4 or more years of college (Table 1). In contrast, only 20 percent of employees in service-producing industries had less than 12 years of schooling, while 24 percent had 4 or more years of college.

The sources of demand for goods and services influences the demand for educated labor as well. In recent periods, about one-third of the final demand for goods and services in the U.S. economy has been generated from direct and indirect (e.g., defense, social security) government spending. Yet because employment from government spending is more education-intensive than private spending, fully one-half of all employment for college graduates can be traced to government spending (Rumberger, 1983, Table 5). Thus some of the growth in the demand for educated labor can be traced to the growth of government spending over the last fifty years.

Costs of Educated Labor

A second influence on the demand for educated labor is its cost relative to that of other productive inputs such as other types of labor and capital. Labor costs are influenced by two factors: compensation (wages and benefits) and productivity. When real (inflation-adjusted) compensation rises faster than productivity, unit labor costs rise and employers may substitute to less expensive production inputs such as capital; when real compensation increases slower than productivity, unit labor costs fall and employers may substitute labor for capital.

In the U.S. real wages (the principal component of compensation) have fallen over the last fifteen years, with greater declines among workers with less education than for those who were college or university graduates (Berlin and Sum, 1988, p. 9). There is no corresponding evidence of a decline in capital cost. Indeed, real wages have not kept pace with rises in labor productivity, and labor compensation has fallen as a proportion of national income. The relative and absolute decline in real labor costs has induced employers to substitute labor for capital in production, partially explaining the rapid rise in employment.

Productivity of Educated Labor

A third influence on the demand for educated labor is productivity which, in turn, is influenced by technology and workplace organization.

Technology. Technologies have long been incorporated into the production process as a means of boosting worker productivity. Older technologies largely performed physical tasks that greatly increased the productivity of workers on the farm and in the factory. Newer technologies, based on sharp advances in micro-electronics, can perform mental as well as physical tasks and are being used to bolster productivity throughout the economy.

One long-standing debate is whether technologies increase or decrease the skill and educational demands of jobs. Although most discussions of the new technologies presume that their sophistication requires a demand for more education, this is only true if such technologies are embodied in forms of capital that are a complement to education. Surely, many applications of technology require workers who are better educated and trained. However, technology can also be used as a basis for capital investment that is a substitute for education. The sophistication of micro-processors can be used to reduce the educational requirements for jobs by substituting the measurement, manipulative, and analytical capacities of hardware and software for these qualities of humans. Evidence on this issue is reviewed below.

Workplace Organization. The organization of work also influences worker productivity. Historically, most firms were organized in a hierarchical fashion, with many lower-level workers at the bottom of the hierarchy and progressively fewer employers at higher levels of the hierarchy. Such an arrangement was thought to be the most efficient and kept control in the upper levels of the organization (Edwards, 1979).

Recently, there has been a noticeable shift in many firms from traditional organizations with a detailed division of labor to one that has less hierarchy and more worker participation in decision-making in order to increase productivity. Instead of just following a repetitive routine, workers are expected to make decisions about product quality, scheduling of production, training, and job rotation and to address problems that arise in production. This type of shift tends to increase the skill and educational requirements of workers, even in the absence of technological change, but it has particularly important implications in conjunction with the application of new technologies that facilitate the use of information to address production needs (Levin, 1987a; Zuboff, 1988). The participative work organization is becoming more prominent in all of the industrialized countries in automobile and electronics manufacturing and in other products and services.

Another change taking place in American firms that is both technical and organizational is the move toward customized production. It is widely agreed that most advanced industrialized countries will not have a competitive advantage in producing standardized products such as steel, chemicals, and many consumer goods that have very long production runs. The newly industrialized countries such as Brazil, Korea, Taiwan, and others have adequate labor forces and the technical capabilities to produce these goods cheaper than the more advanced industrialized countries.

The comparative advantage of the more advanced industrialized countries will be their highly educated workforces and quick adaptation of advanced technologies which will provide the potential flexibility to address the customers' needs for a large variety of customized products with shorter production runs and high adaptability to the requirements of different clientele (Piore and Sabel, 1984; Reich, 1985). The availability of such customized products and services will, in themselves, spur the productivity of other firms in the economies. The very high educational attainments of their labor forces will create the basis for adaptability to design and produce a range of customized products and services. Such an economic role will require a flexible work force with high levels of general skills rather than a repertoire of standardized capabilities that can be applied only to a fixed workplace regimen.

International Competition

The final influence on the demand for educated labor is international competition. International competition affects the demand for educated labor through its influence on the level and composition of demand for U.S. goods abroad and its influence on the level and composition of the supply of foreign goods into the U.S.

The question of the level and composition of imports and exports depends crucially on their prices relative to those of similar goods that are domestically produced. Since prices in international trade depend upon both labor costs and exchange rates, both can influence the patterns of trade with respect to overall levels and the education-intensiveness of their composition among different goods and services. It is generally perceived that U.S. exports tend to be more education-intensive than imports although no comprehensive study has ever been undertaken. But, as technology in micro-electronics and related industries make it easier to employ less-educated workers, technology transfer enables an increasing shift of formerly education-intensive production to the less-developed countries. Such shifts are presently taking place. In general, new technologies are creating new international structures of production whose implications for the employment of educated workers cannot be fully forecast in a rapidly evolving situation (O'Connor, 1987).

Impact on the Demand for Skills and Education

All of the factors discussed above influence the demand for schooling in the economy. While it is impossible to predict precisely the extent of these changes and their specific impact on education and skill requirements of jobs, it is possible to examine past trends and current forecasts to get some idea of future demand.

For the aggregate economy, changes in the skill requirements of jobs stem from two factors: (1) changes in the composition of jobs in the economy, and (2) changes in the skill requirements of individual occupations. Changes in the composition of jobs in the economy--such as employment growth that favors high skilled jobs over low-skilled jobs--can increase aggregate skill requirements in the economy even if the skill requirements of individual occupations do not change. Similarly, changes in the skill requirements of individual occupations--such as increased skill requirements stemming from the increased use of new technologies--can raise aggregate skill levels even if there are no changes in the composition of jobs in the economy. The issue of whether skill requirements of jobs is increasing or decreasing has generated a great deal of debate and has been fueled by conflicting empirical evidence. What does the evidence say?

Changes in the Composition of Employment. Most of the evidence on changes in the composition of jobs in the United States comes from official employment forecasts of the U.S. Bureau of Labor Statistics (BLS). Every two years, the BLS develops detailed projections of future economy activity, industrial growth, and employment within industries and occupations based on an elaborate econometric model (U.S. Bureau of Labor Statistics, 1987). While such forecasts are always subject to some error, reviews of past forecasts show they are reasonably accurate in predicting overall trends and relative growth rates among major industries and job groups (Goldstein, 1983; U.S. Government Accounting

Office, 1985; Fullerton, 1988). The latest projections cover the period from 1986 to 2000. Thus they provide a glimpse of the future job market in the U.S. over the next decade or so.

The BLS projections have been used to estimate the educational requirements of future jobs based on the schooling level of current job holders (e.g., Levin and Rumberger, 1987; Johnston and Packer, 1987; Silvestri and Lukasiewicz, 1987). This can be done by first computing the distribution of schooling of the existing labor force for individual occupations and then using occupational forecasts to estimate required schooling levels for the future economy. This procedure assumes that the educational requirements of individual occupations will not change over time, an assumption supported by the literature reviewed below which suggests there is no particular trend in rising or declining skill requirements within occupations. The procedure also assumes that current job holders have the appropriate level of education that there jobs require which, according to the literature on overeducation reviewed below, may not be the case.

Two sources of confusion surround the use of occupational projections for estimating the educational requirements of future jobs. One comes from the practice of using figures on the fasting growing jobs in the economy as indicative of overall trends in educational requirements (e.g., Johnston and Packer, 1987, p. 97). The problem with such a practice is that it tends to overstate changes in educational requirements because the fastest growing jobs generally require above-average education levels, but will generate few new jobs.

To illustrate, recent BLS projections show that the 10 fastest growing jobs in the U.S. economy are concentrated in health and technical fields and require above-average education levels, as shown in the top half of Table 2. But these jobs are mostly in new fields that employ relatively few people so that these fast growth rates will actually produce few new jobs--less than 5 percent of the new jobs projected between 1986 and 2000. In contrast, more traditional occupations that generally require lower education levels are expected to grow more modestly over this period on a percentage basis, but because they employ so many people, these modest growth rates will produce a substantial number of new jobs. The 10 occupations that will produce the greatest number of new jobs--shown in the bottom half of Table 2--will account for 30 percent of all new jobs expected between 1986 and 2000. In fact, 30 occupations, out of the 480 that the BLS forecasts, are expected to generate 50 percent of all new jobs in the U.S. economy between 1986 and 2000 (Silvestri and Lukasiewicz, 1987, Table 5). But all these sets of figures only provide a limited view of changes in the educational requirements of jobs for the overall economy.

A second source of confusion about the use of occupational projections concerns the practice of focusing on only on new job growth as indicative of overall educational requirements of future jobs. Although the focus on new jobs can reveal trends in the educational requirements, it is important to examine the educational requirements of both new jobs and existing jobs since the latter will provide more employment opportunities for future job seekers that the former.

To illustrate, estimates of the educational requirements for jobs in 1986 and 2000 are shown in Table 3. In 1986, about 58 percent of job holders had no more than a high school education, while 21 percent had 4 years of college or more. New jobs expected between 1986 and 2000 have higher educational requirements than existing jobs--48 percent at the high school level and 29 percent at the 4-year college level. But since only one out of every six jobs in the year 2000 will be a new job, the overall educational requirements of all jobs in the year 2000 are likely to be quite similar to those at present. These results are similar to those derived by the BLS (Silvestri and Lukasiewicz 1987, Table 8) and comports closely with the judgments of the Panel on Technology and Employment of the National Research Council (Cyert and Mowery, 1987, p. 103).

Changes in the Skill Requirements of Jobs. Perhaps the most controversial issue about skills concerns the question of whether technology tends to increase or decrease the skill requirements of jobs. This issues has been debated in earlier periods of technological change and is again being debated in both the research and policy arenas (Braverman, 1974; Spenner, 1985; Rumberger, 1987a).

The common perception is that the rising use of computers and other new technologies in many occupations must be raising the skill requirements of those occupations. But this assertion does not take account of the fact that most persons who use computers require no special computer skills. For example, warehouse clerks and supermarket checkout clerks typically use a computer readout device to read barcodes on products as they are purchased, sold, shipped, and received. But the use of this device requires no knowledge of computers. Wordprocessing operators and office workers need only learn how to operate a new piece of office equipment, as they have done in the past, not how to program or understand computers. This training can be measured in hours or days, not weeks, months, or years.

A recent study of a national sample of almost 3000 small businesses in the U.S. found that the average duration of training for a wide range of computer applications in offices by those without computer skills was only about 30 hours (Levin and Rumberger, 1986). The same study found that interest and enthusiasm, followed by reading and comprehension skills were far more important for learning to use the computer than extensive technical training (Levin and Rumberger, 1986). In general, the many workers in the U.S. who use computers in their jobs utilize standard computer packages that require very little previous education or training (Goldstein and Fraser, 1985).

Reviews of past studies on the impact of technologies on skill requirements reach the conclusion that past technologies have tended to raise the skill requirements of some jobs, while lowering the skill requirements of others, with a net result that aggregate skill requirements have not changed much (Spenner, 1985, 1986; Rumberger, 1981a, 1987a; Flynn, 1988; Form, et al., 1988; Hodson and Parker, 1988). After reviewing the evidence on the impact of technology on skill requirements, the National Academy of Sciences concluded in a recent report:

> ...the empirical evidence of technology's effects on skills is too fragmentary and mixed to support confident predictions of aggregate skill impacts. Despite this uncertainty, however, the evidence suggests that the skill

> requirements for entry into future jobs will not be radically upgraded from those of current jobs (Cyert and Mowery, 1987, p. 103)

One reason the existing research literature presents a such mixed view is that technology and other workplace changes may affect work skills in different ways depending on conditions and characteristics of the firms where the changes are introduced. For example, a recent study of firms that use the same automated manufacturing technology found major differences in the amount and type of labor employed between Japanese and U.S. firms (Jaikumar, 1986). Such evidence supports a contingency perspective that changes in skills have no predetermined direction, but rather depend on a host of specific and perhaps conflicting influences that may result in either the upgrading or downgrading of work skills.

Of course, the future may not look like the past. One major difference concerns the type of technologies and their capabilities. Whereas many past technologies enabled machines to reduce the physical requirements of work, present and future machines are more capable of displacing the mental requirements of work (Rumberger, 1987a). As Nobel laureate Wassily Leontief (1983) has pointed out:

> Computers and robots replace humans in the exercise of mental functions in the same way as mechanical power replaced them in the performance of physical tasks. As time goes on, more and more complex mental functions will be performed by machines. Not unlike large bulldozers assigned to earthmoving jobs that could not possibly have been carried out by even the strongest laborers or draft animals, powerful computers are now performing mental operations that could not possibly be accomplished by human minds. Any worker who now performs his task by following specific instructions can, in principle, be replaced by a machine. This means that the role of humans as the most important factor of production is bound to diminish--in the same way that the role of horses in agricultural production was first

> diminished and then eliminated by the introduction of tractors (pp. 3-4).

The problem with existing evidence. In general, existing evidence on the educational demands of work is not adequate for formulating policies on education and training. One serious deficiency is that most empirical studies rely on single, aggregate measure of skills, when current research in education and psychology suggests that there are many distinct dimensions of skills (Rumberger, 1988). These dimensions include the cognitive domain (e.g., verbal, reasoning skills), the physical domain (e.g., sensory, motor skills), and the social domain (e.g., interpersonal skills).

Of course some analysts have argued that knowledge of distinct skill requirements for different jobs is unnecessary because it is claimed that worker productivity can be improved significantly in all jobs by simply increasing the general aptitude of workers (e.g., Schmidt and Hunter, 1977). These claims have been challenged, however, in part because the ability tests used in the sampled occupations have largely been validated on correlates of work performance, such as job knowledge and supervisory ratings, rather than on actual measures of work performance (Levin, forthcoming). Moreover, to the extent that jobs differ in the abilities that they require, then the predictive validity of ability tests in one set of jobs would not readily apply to another set of jobs. At this point, the degree to which validity studies can be generalized across occupations remains an open question (Fleishman and Quaintance, 1984, pp. 434-436).

Another deficiency of existing research is that it is unable to reveal how the various forces shaping the educational requirements of jobs interact to influence the level and types of skills demanded in different jobs, firms, and industries. In particular, existing research has tended to focus more on the effects of changes in technology rather than on the effects of changes in organization, although the latter may be at least as important as the former in influencing skill requirements. Research reveals, for example, that even firms in the same industry using ostensibly the same technology can organize production quite differently, resulting in different types and skill demands of jobs (Baron and Bielby, 1980; Jaikumar, 1986). Until there is better information on the types of changes taking place in various firms and industries and their impact on the educational requirements of jobs, it is difficult to speculate with any confidence on aggregate trends in the overall demand for schooling.

New Competencies. While existing literature is incomplete, a growing number of policy reports have been issued over the last several years that suggest future workers will need a broad array of new competencies in the future workplace (e.g., National Academy of Sciences, 1984; U.S. Departments of Labor, Education, and Commerce, 1988; Reich, 1988; U.S. Congress, 1988; Carnevale, Gainer, and Meltzer, 1989). Virtually all of these reports set out a classification of skills that are necessary for productive, entry-level workers.

There are three tenets reflected in all of the reports, whether written by employer groups, training associations, social commentators, or government agencies. First, the U.S. labor force cannot compete with labor forces in the newly industrializing countries unless it raises its productivity or reduces its cost and standard of living. In order to raise productivity the labor force will need improved skills and education. Second, it is far more important for schools to provide the fundamental knowledge and thinking skills that will enable workers to learn on the job and adapt to new technologies and other work demands than to teach narrow vocational skills. Third, the movement towards customized production and worker participation require workers with the ability to solve problems as they arise and to work creatively and productively with others.

These tenets and their implications for a new set of workplace competencies they may engender are the subject of an on-going research project, "Educational Requirements for New Technologies and Work Organization," being conducted at Stanford University (Levin and Rumberger, 1985). The purpose of the project is to identify the competencies required in work settings characterized by different types of technologies and different forms of workplace organization. The research design is based on intensive observation techniques of individual workers and the work process, supplemented by worker and supervisor interviews. On the basis of studies at several worksites, a tentative array of thirteen competencies that workers will need to function effectively in these newer work settings have been identified.

These competencies are described in Table 4. Most of these competencies are not the standard ones stressed by elementary and secondary schools in the U.S. For example, most schools teach traditional academic disciplines (e.g., math, science) through rote learning and memorization in classroom settings that emphasis individualism and individual competition. In contrast, these competencies stress applications of broad knowledge to complex, real-life situations and learning strategies that involve group and cooperative learning. Yet most of these competencies can be taught in regular school settings (e.g., Hurd, 1986; Sternberg, 1985a).

Although students with university degrees are likely to have more educational experiences in these areas, even in these cases there is little guarantee that workers will be fully capable. And, we must keep in mind that all of these competencies are ones that may be required in addition to the standard cognitive and technical skills that we expect of our workers. That is, if firms continue to develop strategies based upon customized production and workplace participation, there will be an increased demand for these types of competencies. Such demands will also tend to more fully utilize the talents of educated workers, but in many cases they may exceed the capabilities of such workers. These requirements also seem to be ones that respond to the needs of small businesses for initiative, creativity, problem-solving, and so on, which is an important concern since small businesses have been extremely important sources of job growth in the U.S. (U.S. Small Business Administration, 1984).

At this point we must await the results of this and other research studies to find how to what extent these and perhaps other competencies will be needed in the future work force. Preliminary findings from our own study indicate that many of these competencies are indeed required in contemporary workplaces that use new technologies and more participative work organization.

Summary of Major Findings

- The average educational requirements of future jobs will not be significantly different than current jobs, as both high-skilled and low-skilled jobs will continue to exist in the future economy.
- Existing research finds that past technologies did not uniformly increase or decrease the skill requirements of jobs; rather the impacts varied and depended on the particular jobs, firms, and technologies.
- Most existing studies have examined changes in the level of education and skills that jobs require and have paid little attention to the types of skills that jobs require; yet both employers and new developments in psychology suggest that a broad array of different types of skills may be necessary in the future workforce.

III. The Changing Supply of Educated Labor

In order to adequately formulate education and training policies, the demand for educated labor must be contrasted with supply. The supply of educated labor is influenced by two factors: the level and composition of the labor force and the educational preparation of the labor force. We will examine recent changes in the size and composition of the U.S. labor force over the last decade and a half, from 1972 to 1986, and future prospects based on government projections for the period from 1986 to 2000. We will also examine trends in the educational preparation of workers.

Labor Force Changes

The U.S. labor force increased by over 30 million persons or 30 percent between 1972 and 1986 as shown in Table 5. This growth resulted from increases in the civilian population as well as an increase in the labor force participation rate of women. The population (16 years old and over) increased by 36.5 million persons or 25 percent, while the labor force participation rate of the population increased from 60 to 65 percent, with women increasing their participation from 44 to 55 percent and men decreasing their participation from 79 to 76 percent (Fullerton, 1987, p. 21).

According to recent government projections, the U.S. labor force will continue to grow in the future, but at a slower pace. The labor force is expected to grow by 21 million or 18 percent between 1986 and 2000 because of slower population growth and a slower growth in the labor force participation rate. The U.S. civilian, noninstitutional population (16 years old and over) is expected to increase by 24 million or 13 percent from 1986 to 2000 (Fullerton, 1987, p. 21). The labor force participation rate of the population is expected to increase over this period from 65 to 68 percent, with women's labor force participation increasing from 55 to 62 percent and men's labor force participation decreasing from 76 to 75 percent. The age composition of the labor force is also expected to change. The number of younger and older workers will continue to decline in the future as it has in the recent past, with virtually all labor force growth coming from increases in the prime age population as shown in Table 5.

The most dramatic change in the U.S. labor force is reflected in its altering racial and ethnic composition. The racial and ethnic populations in the U.S. are increasing at a faster rate than the White population because of increased immigration of predominantly minority populations, and higher fertility rates of minority females, particularly Hispanics. Although immigration contributed only 17 percent of the population increase between 1972 and 1979, it contributed 25 percent for the 1979-86 period and is expected to contribute more than 30 percent over the 1986-2000 period (Fullerton, 1987, p. 21).

Between 1979 and 1986, Blacks, Asians, and Hispanics represented 45 percent of the net increase in the U.S. civilian labor force (Fullerton, 1987, Table 1). Between 1986 and 2000, this proportion is expected to increase to 57 percent as shown in Table 5. In other words, racial and ethnic minorities will constitute more than half of the expected growth in the U.S. labor force over the next decade and a half. Population projections beyond the year 2000 as well as the large concentration of minority students in schools suggest that the proportion of minorities in the labor force will continue to increase well into the next century.

Educational Preparation

The reason that these demographic changes in the labor force are so important is that they can be indicative of the educational preparation of future workers. Black and Hispanic workers generally have lower education levels than Whites, so an increase in the proportion of Black and Hispanics workers will lower the overall education level of the labor force in the absence of significant changes in the educational preparation of these groups.

Various measures of educational achievement illustrate these differences. In 1985, for example, 40 percent of all Hispanics 25 to 29 years old were high school dropouts, compared to 20 percent for blacks and 13 percent for whites (Table 6). Conversely, 23 percent of young Whites have completed four or more years of college, compared to about 11 percent or less for Blacks and Hispanics.

Other measures of educational achievement also suggest that minorities may be inadequately prepared for future jobs. A recent survey of 21 to 25 year olds found that 47 percent of all blacks and 29 percent of all Hispanics read below the 8th grade level, compared to 15 percent of all young whites (Table 6). Similar disparities exist for high school age youth.

Since education levels of younger minority workers entering the labor market are generally much higher than older minority workers that are leaving, one might expect the educational preparation of minorities to improve overall in the future. For example, only 20 percent of Blacks, 25 to 29 years old, have dropped out of high school compared to 40 percent for all Black workers 25 years old and over (U.S. Bureau of the Census, 1987, Table 19). Similarly, younger Hispanic workers have completed higher levels of schooling than Hispanic workers overall.

Yet several demographic changes could actually lower the educational preparation of all future workers, minorities and majority alike. One is the increasing proportion of children living in poverty, which rose from 15 percent in 1970 to 20 percent in 1985 (Table 7). Another is the increase in the number parents living in single parent households, which rose from 12 percent to 23 percent during this period. In addition, almost one in five children live in households where an language other than English is spoken. Each of these indicators are associated with higher dropout rates and lower levels of educational achievement. For example, dropout rates are higher for students from poor families and single-parent households and for students with poor grades (Table 8). Together, these indicators suggest that as many as one-third of American youth are "at-risk" of educational failure (Levin, 1986; Pallas, Natriello, and McDill, 1988).

At the same time that the number of at-risk students is rising in the U.S., government programs designed to serve these students have been cut. The major federal program for the economically disadvantaged, compensatory education, was only reaching only 30 to 45 percent of all eligible students in 1976 (Kennedy, Jung, and Orland, 1986, p. 84). Since that time, the number of poor students has risen about 20 percent, while real federal expenditures for the program have been cut by 17 percent (U.S. Department of Education, 1988, Tables 18, 29; U.S. Executive Office of the President, 1988, Table 12.3). Other programs designed to serve the educational disadvantaged are also inadequate. Currently, there are 41 million high school dropouts in the U.S., representing one-quarter of the population, yet only a small fraction of those are being served by any type of training or recovery program (Rumberger, forthcoming). Overall, expenditures for education have declined from 5.8 percent of the federal budget in 1980 to 3.7 percent in 1984 (U.S. Bureau of the Census, 1985, Table 208).

Summary of Major Findings

- Minorities, who traditionally have much lower levels of educational preparation that other workers, will contribute more than half of the expected growth in the U.S. labor force between 1986 and 2000.
- The growth of poverty and single-parent households could significantly increase the number of educational deficient workers in future in the absence of increased effort to address the educational needs of this population.

IV. The Market for Educated Labor

In the last two sections we have tried to capture some of the dynamics of both the demand for and supply of educated labor. There are a number of overall conclusions that one could draw from that analysis. First, the movement towards the application of new technologies is not necessarily associated with rapid educational upgrading of jobs. Such upgrading depends upon whether the technologies are used as a substitute for or a complement to higher level skills, and concomitant changes in the organization of the workplace, particularly the move from traditional work hierarchies to worker participation in decisions. Moreover, the supply of educated labor depends not only upon expansion of educational opportunities, but the incentives and other conditions that induce different groups in the population to increase their educational attainments.

One of the major problems in conceptualizing the educational requirements for the future workplace is the emphasis on comparing the average education associated with occupational needs and the average educational level of the workforce. For example, the most typical statistic that is used to argue for more education is that the average level of education required for future jobs will be somewhat higher than that required for present jobs. But, this concern for the "average" obscures the fact that there are two major forms of mismatch concealed by the average level of education of workers and needs of the workforce. Some workers may be vastly undereducated for the jobs that are available, and others may be substantially overeducated. The point is that average educational levels can comport with average educational requirements for jobs, while serious mismatches exist in the underlying situation between workers' educational qualifications and job requirements. Thus, the focus on whether rising average levels of education are keeping pace with rising educational needs of occupations may ignore important policy issues.

This problem is further compounded by the fact that workers with the appropriate level of education may have the wrong type of education in the sense of not possessing some of the newer skills that are required for participation and customized production. That is, there has been too much of a preoccupation with the amount of education possessed by workers rather than the suitability of that education for changing work conditions.

Undereducation

Undereducation refers to the situation in which members of the labor force do not have the educational experience and skills to qualify even for entry level jobs or to benefit from training that will provide upward mobility. The U.S. is now facing a rising demography of students who are considered to be educationally at-risk. This term is used to refer to students who by virtue of a lack of resources in their home or community are unlikely to succeed in schools as schools are presently constituted.

Such students are heavily concentrated among immigrants, racial minorities, poverty families, single-parent families, and those with low education. It has been estimated that at the present time about one-third of all students in elementary and secondary school are at-risk, and the number is rising because of the high levels of immigration and high birth rates of at-risk populations as reflected in the previous section of this paper (Levin, 1986). A large proportion of students from these populations do not complete secondary school (Rumberger, 1987c), a proportion that may be as high as half. Even those that do complete secondary school show very low achievement scores, equal--on average--to students with four years less formal schooling. This suggests that even the amount of education completed in these populations will be misleadingly high.

As jobs have shifted from menial and physical tasks to those in the services, the appropriateness of skills that are learned in schools have become a concern, even for lower-level service jobs such as salesclerks, waiters, cashiers, office clerks, and so on. These jobs require good communication skills, reasoning, numeracy, and other qualifications that have been set out by employers as well as proper work values and attitudes which have not always been inculcated by the schools and family (National Academy of Sciences, 1984). In addition, upward mobility depends crucially on the ability to learn new skills which depends, in turn, on the educational foundation at labor market entry. Without these threshold skills, workers from these backgrounds are unlikely to experience success in the labor market (Murnane, 1988). And given the dramatic rises, both proportionately and absolutely, in the size of at-risk populations, employers may face a serious and increasing challenge in attracting an appropriate labor force.

This prospect has already alarmed the business community in the U.S. as well as government agencies (Committee for Economic Development, 1987; U.S. Department of Labor, Department of Education, and Department of Commerce, 1988). Although the U.S. schools have tried to address the needs of at-risk populations for at least two decades, the efforts have met with only meager success (Levin, 1986). The seriousness of the problem is increasing because of the massive rise in the numbers of students who are at-risk in the schools and who will ultimately join the labor force. In our view, the response must be substantial and fundamental, moving away from remediation as a strategy and in the direction of acceleration of learning (Levin, 1987b, 1988). This will not only require a far greater national investment in the education of at-risk students, but it will require a fundamental restructuring of schools and educational activities.

Overeducation

At the same time that the supply of lesser-educated workers and especially those from at-risk backgrounds may be inadequate to meet the skill requirements of even the least skilled jobs, there may also be an excess supply of the most educated workers, particularly college graduates. This phenomenon has been referred to as overeducation, underemployment, or surplus schooling and has been the subject of considerable research in both the U.S. and in other industrialized countries (e.g., Freeman, 1976; Clogg, 1979; Rumberger, 1981b; Hartog and Oosterbeek, 1988).

A number of studies have argued that the educational attainments of the labor force have increased much faster than the educational requirements of jobs, resulting in a condition of overeducation (e.g., Berg, 1970; Freeman, 1976; Rumberger, 1981b). For instance, enrollments in higher education increased by threefold between 1960 and 1980, producing a similar increase in the number of workers with a college education (Rumberger, 1984, Table 1). During the same period, the number of jobs requiring a college education, particularly professional and technical jobs, only increased twofold (Rumberger, 1984, Table 2). As a result, an increasing number of college graduates--primarily during the 1970s--were forced to take jobs where a college education was not required. Especially hurt were female college graduates. For example, a greater proportion of young, female college graduates were employed in lower-skilled clerical jobs in 1980 than in 1960 (Rumberger, 1984, Table 5).

Although the size of the traditional college-age population is expected to decrease over the next decade or so in the U.S., government forecasts indicate the number of college graduates will remain fairly constant as more and more older persons return to college to pursue their degrees. In addition, the economic incentives for individuals to go to college are higher now than any period in the last two decades, which could further increase the number of college graduates (Murphy and Welch, 1989). Official government forecasts indicate that the supply of college graduates available will exceed the number of jobs requiring a college education by about 100,000 per year, or by 1.5 million over the next decade and a half (Sargent, 1988, Chart 2). Such figures could understate the extent of the problem since almost half of all recent college graduates report that the jobs they obtained after completing college did not require a college degree (Braddock and Hecker, 1988, Table 4).

Overeducation is considered a problem, in part, because it suggests that scarce government resources are allotted toward a system of higher education that is producing graduates in excess of labor market needs. While such an argument may imply that overeducation, at worst, generates opportunity costs, the evidence suggests more serious consequences. A growing body of literature suggests that overeducated workers are less satisfied in their jobs, exert less effort, and therefore have lower productivity and earnings than workers in jobs more commensurate with their education and training (Duncan and Hoffman, 1981; Rumberger, 1981b, 1987b; Tsang and Levin, 1985; Hartog and Oosterbeek, 1988). A recent study estimated that each year of overeducation among the workforce of U.S. telephone companies was associated with a net loss in output of about $3.8 billion in 1982 (Tsang, 1987, p. 248). In this case, the negative effect on productivity of overeducation relative to the existing needs of the telecommunications industry was shown to outweigh the positive effect of the additional human capital that was employed. This example suggests that the individual and social costs of overeducation can be substantial.

Schools versus Workplaces

Perhaps one of the most important sets of issues that have arisen in recent years address the problem of preparing students for work in schools that are not similar to workplace institutions in a number of important ways (Berryman, 1988; Resnick, 1977). First, schools tend to evaluate students on a relatively small number of competencies. These tend to focus on a limited set of dimensions and on abstract knowledge rather than the applied knowledge which is used in practical situations. Recent work on abilities suggests that the number of distinct abilities is larger and somewhat different in composition than those that schools recognize and test for (Sternberg, 1985b; Gardner, 1983). Second, schools focus on individual work tasks and knowledge rather than shared work tasks and shared knowledge. As we have noted above, there is increasing evidence that working in groups is becoming a common feature of workplaces. Third, schools seem to measure academic success in ways that do not necessary reflect competencies of persons in actual work situations (Wagner and Sternberg, 1986; Rogoff and Lave, 1984).

For example, Lave, Murtaugh, and de la Rocha (1984) found that persons who failed academic tests on fractions and decimals were able to perform almost error-free when confronted with similar calculations in the supermarket. Other researchers have found that individuals without the ostensible academic knowledge are able to learn how to perform satisfactorily in the workplace or in the military (Sticht, et al., 1987; Saxe, 1988). In fact, individuals often find methods of work performance that meet their unique needs and abilities in contrast to the single approach that is stressed in school tasks (Scribner, 1986).

These findings suggest that the knowledge that is learned in the school context does not necessarily predict performance in the work context. School measures of abilities are too limited and too removed from the actual use of that knowledge. Moreover, present school organization tends to emphasize individual learning rather than group learning and collaboration, even though the workplace is increasingly characterized by the latter. These phenomena imply the need to make at least some changes in schools to accommodate the needs of the workplace or to rely more heavily on other institutions including the workplace for some dimensions of work preparation.

Summary of Major Findings

- There is an growing mismatch between the educational attainment of workers and the educational demands of jobs at both ends of the spectrum, with some workers undereducated for their jobs and others overeducated for their jobs.
- An additional imbalance exists between the types of knowledge and skills being taught and those being demanded in the workplace.

Schools, in general, emphasize rote learning of traditional academic subjects in a classroom setting stressing individual work, while workplaces increasingly require broad-based knowledge applied to complex problems in a cooperative setting.

V. Implications for Research and Data

Although current research and data are adequate to address many of the questions that arose in the earlier discussion, there are several areas where additional research and data are needed.

One of the major deficiencies of existing research concerns adequate measures of the various types of competencies that are demanded the workplace. Both employers and new developments in psychology have identified a wide range of skills and competencies that are needed in the modern workplace. Yet most research studies and existing data only provide information on a very limited number of such competencies. For example, the Dictionary of Occupational Titles (DOT), probably the most widely used source of information on skill requirements and other attributes of jobs in the U.S. economy, has been criticized for providing duplicate measures of some attributes while ignoring other important attributes (Miller, et al., 1980; Rumberger, 1988). What is needed is a comprehensive taxonomy of the full range of skills and competencies workers need to be productive in modern work settings. Once such a taxonomy is developed, it could be incorporated in the future editions of the DOT and other labor market studies.

A similar deficiency exists in data and studies of labor supply. The most common measure of educational preparation for jobs found in existing surveys and studies, such as those produced by the U.S. Bureau of the Census, is years of schooling completed. While such a measure provides a general indication of the level of schooling workers have, it provides little information about the types of schooling they have received and the types of skills and competencies they possess. Newer national surveys being conducted by the U.S. Department of Education, such as High School and Beyond, contain additional information on cognitive test scores and courses completed in high school and college, but still do not provide a more comprehensive assessment of the cognitive, physical, and social competencies of individuals that may be important in effective job performance.

Another area where additional research and data are needed concerns the determinants of the educational demands of work. Existing research takes the form of either aggregate, national studies, such as those produced by the U.S. Bureau of Labor Statistics, or case studies of particular jobs, firms, and industries. The former are valuable to get a general view of near-term trends in the composition of jobs in the educational attainments of workers in those jobs, while the latter are valuable to better understand the process of workplace changes. Both are deficient, in part, because they often do not provide information on the full range of skills required in the workplace, as the above discussion pointed out, but also because they do not provide an indication of how widespread differences in skills and competencies are across jobs, firms, and industries and the factors that account for those differences. Yet research has shown that individual firms can employ different technologies and organize work quite differently even in the same industry, with very different impacts on skills and education (e.g., Baron and Bielby, 1980; Jaikumar, 1986). Additional research is needed on exactly how technology, workplace organization, and other factors influence the educational and skill demands of work, as well as how extensive these influences are in U.S. firms. The former information could be obtained from comparative case studies, while the latter could be obtained through organizational surveys.

Finally, additional research is needed on effective practices and policies for education and training that can successfully develop the skills and competencies needed in the modern workplace.

VI. Implications for Policy

Much of the public policy attention that has been devoted to the relation of education to the workplace has focussed on whether the workforce will have an adequate level of education for future jobs (e.g., Johnston and Packer, 1987). Clearly, this must be a concern as a larger and larger portion of the workforce is drawn from populations who have traditionally obtained low educational attainments. But, an obsession with only the average level of education tends to ignore what may be a much larger disjuncture, the fact that the schools may be providing the wrong type of education for workplace needs. The foregoing analysis suggested that much of the public policy attention has been devoted to whether the level of education of the workforce will be adequate to the needs of the economy. We believe that policy should also address whether the types of experiences that schools provide are appropriate for preparing effective workers; the desirable roles of schools, universities, training institutions, and workplaces in preparing workers, and the efficiency of firms in utilizing educated labor. Four policy areas warrant attention.

Achieving Adequate Educational Levels for the Disadvantaged

The most important threat to obtaining adequate numbers of persons with education suitable to the future economy is the growing population of disadvantaged and at-risk students. During the remainder of this century, the majority of new workers will be drawn from racial minority groups. As we noted above, these groups have the highest dropout rates, and their achievement scores are considerably below those associated with the number of school grades they complete. Many of them may not reach the threshold of literacy, numeracy, and communication that is necessary to gain steady employment and benefit from training. Further, the fact that at-risk populations are more likely to get involved in the criminal justice system, drugs, and other negative social experiences will work against their integration into the workplace.

What is clear is that new and radically different approaches to schooling and social services will be needed to stem the traditional academic failure of these groups and bring them into the educational mainstream. Particular directions that have promise are:

- the expansion of Head Start to cover all disadvantaged youngsters rather than the 17 percent or so of eligible youngsters who are presently enrolled;
- the radical revamping of schools attended by at-risk students to promote success rather than remediation. Promising models are

found in the works of Slavin and Madden (1989), Comer (1980, 1988), and Levin (1987b);

- heavier emphasis on parental involvement and parental education programs on the basis that parents represent important influences and examples for the educational success of their children;
- more coordination of social services that serve disadvantaged populations in order to improve the educational attainments of their children;
- increased commitment of businesses, colleges and universities, volunteers, and other institutions in the community to providing programs and assistance for raising the educational performance of at-risk students, such as grants to schools for special programs, part-time and summer jobs for students, awards for academic achievement, and the use of volunteers and mentors and tutors;
- greater social investments in the education of disadvantaged through increasing the financing of schools attended by such students;
- more attention to adult literacy programs, dropout recovery programs and other efforts that can improve the basic skills of disadvantaged adults.

Appropriate School Experiences

We believe that there is sufficient evidence that schools are not providing many of the experiences that are needed in the workplace. Of particular concern is the emphasis on individual knowledge and abstract learning in the school in contrast to the need for shared knowledge and concrete learning in the workplace. But, beyond this there is the question of a poor fit between the knowledge that workers need and that which the schooling experience imparts. For example, schools place much less emphasis on initiative, problem-solving and working in groups than does the workplace. Technological literacy of students is not adequate for understanding the world around them. The structure of traditional classroom instruction does not align well with the structure for learning in the workplace. The former tends to be based heavily on individual learning within a formal and structured situation whereas much learning in the workplace is group-oriented and informal. Finally, the workplace tends to be multidisciplinary and applied in contrast to the emphasis on individual subjects and abstract learning in schools. The following policy implications are suggested:

- schools should structure much more of their activity in groups to give students the experience of working productively with others and mastering the communications skills that are necessary to do so.
- schools should devote more attention to problem solving and activities in which students must take initiative to define and address their learning needs in order to prepare workers for similar tasks in the workplace.
- schools should emphasize more cooperative learning and peer tutoring to prepare students for workplaces in which groups work cooperatively and in which peers are an important part of the training process.
- schools should focus on developing evaluation skills among students to prepare them for evaluation of alternatives as well as

for evaluating the quality of their own work in correspondence with similar requirements in participative workplaces.

- schools should give students more "hands-on" experiences to apply the abstract principles that are normally taught in school. These can encompass practical applications of learning experiences such as everyday uses of technology or forms of communication. They also suggest greater use of manipulable materials in learning at the lower levels.
- student testing of competencies should coverage a wider range of abilities as well as the ability to apply knowledge in practical forms.

Appropriate Roles of Institutions for Workplace Preparation

Much of the traditional literature on the preparation of students for the workplace has focussed on vocational training for particular types of jobs. More recently there is a recognition that much preparation for the workplace is not narrowly vocational, but derives from the schooling process itself at all levels. Out of this recognition has come a concern that schools prepare workers with the general skills, enthusiasm, commitment, and capabilities to learn what they need to learn in the workplace. That is, the school is viewed as less of a agency for preparing workers with specific work skills and more as a place for preparing workers who are capable of learning those skills on the job.

A major policy area that must be addressed are the roles of elementary and secondary schools, community colleges, training institutes, universities, and workplaces. All students go through one or more of these institutions, so there are questions of articulation among them. Further, these suggest questions of cost-effectiveness in where education and training take place as well as how earlier schooling affects the efficiency of later schooling and training at different post-secondary sites. Above all we need to work out some agreement on what is expected from each type of institution in terms of comprising a total educational and training system for the workplace. We are far from fully understanding institutional roles and even farther from setting out useful policies that can build upon a useful articulation.

Effective Utilization of Educated Labor

A final set of policy implications derives from the underutilization of educated labor. As we suggested above, educated persons have both a greater need to make decisions affecting their activities as well as greater capabilities to do so. Increasingly, these needs and capabilities are being reflected in workplaces that encourage participation and shared decisions as well as broader job designs, work groups, and worker rotation. These new forms of work organization are being adopted largely because they increase productivity, but they do have the effect of more fully utilizing the educated workers.

Both as a solution to lagging productivity and as a way to build in greater incentives for acquiring and using their education, public policy ought to promote new ways to utilize educated labor. Based upon the record of firms that have created semi-autonomous teams, shared decisions, flatter hierarchies, and other forms of worker participation, this is certainly one direction that might be promoted. But, more than this, firms should be encouraged to recognize and build-on more fully the capabilities of their workers. Students should be able to see that many of the skills that they are developing in schools will be related to ones that they use in the workplace.

Table 1

Employment, Employment Growth, and Educational Attainments of Workers by Industrial Sector, 1980 and 2000

(percent distribution)

Sector Industry group	Employment, 1986	Employment Growth, 1986-2000	Educational Attainment (years), 1980			
			0-11	12	13-15	16+
Total	100.0	100.0	24	37	20	19
Goods-producing	24.9	0.0	30	42	17	11
Mining	0.8	-0.2	31	37	18	14
Construction	5.0	4.4	33	40	18	9
Manufacturing	19.2	4.2	31	42	16	11
Service-producing	75.1	100.0	20	35	21	24
Transportation, communications, and public utilities	5.3	2.4	20	46	23	11
Wholesale and retail trade	23.8	31.8	31	40	19	10
Finance, insurance, and real estate	6.4	8.1	8	39	26	27
Services	22.7	49.8	19	31	23	27
Government	16.9	8.0	14	31	18	37

Note: Employment data for wage and salary workers only. Educational attainment were based on data from the 1980 Decennial Census.

Source: Valerie A. Pesonick, "Industry Output and Employment Through the End of the Century," Monthly Labor Review, 110 (September 1987), Table 1; Russell W. Rumberger, The Changing Industrial Structure of the U.S. Economy, Report 86-SEPI-86 (Stanford: Stanford Education Policy Institute, July 1986), Table 3.

Table 2
Employment, Employment Growth, and Required Education for the Fastest Growing Occupations in the United States: 1986 to 2000

(numbers in thousands)

	Employment		Job Growth, 1986-2000			Req'd Ed. (yr.)*
	1986	2000	Number	Per.	Per. of Tot.	
Jobs with greatest growth (%)						
Paralegal personnel	61	125	64	103.7	0.3	13-15
Medical assistants	132	251	119	90.4	0.6	13-15
Physical therapists	61	115	53	87.5	0.2	16
Physical & corrective therapy assistants	36	65	29	81.6	0.1	12
Data processing equipment repairers	69	125	56	80.4	0.3	13-15
Home health aides	138	249	111	80.1	0.5	12
Podiatrists	13	23	10	77.2	0.0	17+
Comp. systems analysts	331	582	251	75.6	1.2	16
Medical records technicians	40	70	30	75.0	0.1	13-15
Employment interviewers, employment service	75	129	54	71.2	0.3	13-15
Total	956	1734	778	81.4	3.6	
Jobs with greatest growth (number)						
Salespersons, retail	3,579	4,780	1,201	33.5	5.6	12
Waiters and waitresses	1,702	2,454	752	44.2	3.5	12
Registered nurses	1,406	2,018	612	43.6	2.9	13-15
Janitors and cleaners	2,676	3,280	604	22.6	2.8	12
General managers and top executives	2,383	2,965	582	24.4	2.7	13-15
Cashiers	2,165	2,740	575	26.5	2.7	12
Truck drivers	2,211	2,736	525	23.8	2.5	12
General office clerks	2,361	2,824	462	19.6	2.2	12
Food counter workers	1,500	1,949	449	29.9	2.1	<12
Nursing aides and orderlies	1,224	1,658	433	35.4	2.0	12
Total	21,202	27,404	6,202	29.2	29.0	
Total employment	111,623	133,030	21,407	19.2	100.0	12

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*Highest level of schooling completed by the majority of employed workers in that occupation as of March 1986.

Sources: George T. Silvestri and John M. Lukasiewicz, "A Look at Occupational Employment Trends to the Year 2000," Monthly Labor Review, vol. 110, no. 9 (September 1987), Table 3; Tabulations based on the March 1986 Current Population Survey, U.S. Bureau of the Census.

Table 3
Educational Requirements of Jobs: 1986 and Projected 2000

(percent distribution)

Educational Requirements (years)	Existing Jobs, 1986	New Jobs, 1986-2000	Projected Jobs, 2000
Some high school (0-11)	18	14	17
High school graduate (12)	40	34	39
Some college (13-15)	21	23	21
College graduate (16+)	21	29	23
Total percent	100	100	100
Number of jobs (thousands)	111,623	21,407	133,030

Note: Estimates of educational requirements were first derived for 284 occupations that the BLS uses to project future employment using schooling levels of the employed labor force in March 1986 and then aggregated to produce estimates for the entire economy. Projected employment in 2000 based on moderate growth projections.

Sources: George T. Silvestri and John M. Lukasiewicz, "A Look at Occupational Employment Trends to the Year 2000," Monthly Labor Review, vol. 110, no. 9 (September 1987), Table 3; Tabulations based on the March 1986 Current Population Survey, U.S. Bureau of the Census.

Table 4
Competencies for the Modern Workplace

1. Initiative	The drive and creative ability to think and perform independently
2. Cooperation	Constructive, goal-directed interaction with others
3. Working in groups	Interaction in work groups that is directed toward both short-term goals of efficient task or activity accomplishment and the long-term goal of group maintenance.
4. Peer training	Informal and formal coaching, advisement and training of peers
5. Evaluation	Appraisal, assessment, and certification of the quality of a work product or service
6. Communication	Appropriate uses of spoken, written, and kinesic communication as well as good listening, reading comprehension, and interpretive skills for receiving messages.
7. Reasoning	Evaluation and generation of logical arguments including both inductive and deductive approaches
8. Problem solving	Identification of problems, generation of alternative solutions and their consequences, selection of an alternative, and implementation of a solution.
9. Decision-making	Employing the elements of problem solving on an on-going basis in the workplace
10. Obtaining and using information	Deciding which information is relevant, knowing where to obtain it, obtaining it, and putting it to use
11. Planning	Establishing goals as well as scheduling and prioritizing work activities
12. Learning skills	Cognitive and affective skills that facilitate the acquisition of new knowledge, as needed
13. Multicultural skills	Understanding how to work with persons from other cultures in terms of language, communication styles, and different values

Table 5
U.S. Civilian Labor Force by Age, Sex, Race, and Ethnicity: 1986 and Projected 2000.

(numbers in thousands)

	1972	1986	2000	1972-1986		1986-2000	
				Number	Per.	Number	Per.
Total	87,037	117,837	138,775	30,800	100.0	20,938	100.0
Age							
16 to 24	20,186	23,368	22,631	3,182	10.3	-737	-3.5
25 to 54	52,325	79,565	100,780	27,240	88.4	21,215	101.3
55 and over	14,526	14,904	15,364	378	1.2	460	2.2
Gender							
Men	53,556	65,423	73,136	11,867	38.5	7,713	36.8
Women	33,481	52,414	65,639	18,933	61.5	13,225	63.2
Race/ethnicity							
White	77,275	101,801	116,701	24,526	79.6	14,900	71.2
Non-Hispanic*	---	93,725	102,615	---	---	8,890	42.5
Hispanic*	---	8,076	14,086	---	---	6,010	28.7
Black	8,748	12,684	16,334	3,936	12.8	3,650	17.4
Asian	---	3,352	5,740	---	---	2,388	11.4

*Persons of Hispanic origin may be of any race, but here are assumed to be White.

Source: Howard N. Fullerton, Jr., "Labor Force Projections: 1986 to 2000," Monthly Labor Review, Vol. 110, No. 9 (September 1982), Table 5.

Table 6
Indicators of Educational Achievement by Race/Ethnicity

	Total	White	Black	Hispanic
Educational attainment, 25-29 year olds, 1985 (% completing)				
High School dropout (0-11 years)	13.9	13.2	19.4	39.1
High School graduate/ some college (12-15 years)	63.9	63.6	69.1	49.8
College graduate (16 years +)	22.2	23.2	11.5	11.1
Reading literacy, 21-25 year olds, 1985 (% reading below 8th grade level)				
Total	21.2	15.0	47.0	29.1
High School dropout	46.4			
High School graduate	22.1			
Reading proficiency, 17 year olds, 1984 (% reading at intermediate level)	83.6	88.9	65.8	69.1
Math achievement, 17 year olds, 1982 (average % correct)	60.2	63.1	45.0	49.4

Sources: U.S. Bureau of the Census, Educational Attainment in the United States: March 1982 to 1985. Current Population Reports, Series P-20, No. 415 (Washington, D.C.: (Washington, D.C.: U.S. Government Printing Office, November 1987), Table 1; Irwin S. Kirsh and Ann Jungeblut, Literacy: Profiles of America's Young Adults (Princeton, N.J.: Educational Testing Service, 1986, Table 6; U.S. Department of Education, Office of Educational Research and Improvement, Youth Indicators 1988 (Washington, D.C.: U.S. Government Printing Office, 1988), Tables 25, 27.

Table 7
Indicators of Student Diversity: Characteristics of Children Under 18 Years Old

	Actual		Projected
	1970	1985	2000
Ethnicity (% distribution)			
White, non-Hispanic		72.0	67.3
Black		15.4	16.9
Spanish origin		10.0	12.9
Other races		2.6	2.9
Poverty Status (% below poverty)			
White	10.5	16.2	
Black	41.5	43.6	
Spanish origin	-	40.3	
Total	14.9	20.7	24.2*
Living with one parent (%)			
White	8.7	18.0	
Black	31.8	53.9	
Spanish origin	-	28.8	
Total	11.9	23.4	25.8*
Language minority status, 1980			
Total		16.9%	

*Estimated based on population projections by ethnicity for 2000 and indicators by ethnicity for 1985.

Sources: U.S. Bureau of the Census, Projections of Hispanic Population: 1983 to 2080, Current Population Reports, Series P-25, No. 995 (Washington, D.C.: U.S. Government Printing Office, November 1986), Table T; U.S. Department of Education, Educational Digest 1988 (Washington, D.C.: U.S. Government Printing Office, 1988), Table 18; U.S. Bureau of the Census, Marital Status and Living Arrangements: March 1985 (Washington, D.C.: U.S. Government Printing Office, 1986), Table A-8; U.S. Bureau of the Census, 1980 Census of the Population, Volume I, Characteristics of the Population, Chapter D, Detailed Population Characteristics, Part 1, U.S. Summary (Washington, D.C.: U.S. Government Printing Office, 1983), Table 1.

Table 8
Dropout Rates for 1980 High School Sophomores, by Income, Family Composition, Grades and Race/Ethnicity

	Total	White	Black	Hispanic
Overall	14.4	13.0	17.2	19.1
Income levels (thirds)				
Top third	13.1	11.6	19.0	17.5
Middle third	12.4	11.4	14.4	17.0
Low third	21.7	22.6	17.8	24.0
Family Composition				
Both parents	12.2	11.3	14.5	16.1
Mother only	20.2	19.9	18.6	25.2
Father only	21.7	21.3	15.6	26.5
Neither	31.7	33.2	29.1	30.6
Self-reported grades				
A	1.4	1.2	3.5	2.3
A/B	6.7	5.7	10.9	11.2
B/C	14.3	13.8	15.0	15.7
C/D	35.4	36.2	31.2	35.9
D/F	82.9	85.5	73.8	81.4

Source: Stephen M. Barro and Andrew Kolstad, Who Drops Out of High School: Findings from High School and Beyond (Washington, D.C.: U.S. Government Printing Office, 1987), Tables 4.7, 4.9, 4.23.

REFERENCES

Baron, James. N. and William T. Bielby. "Bringing the Firms Back In: Stratification, Segmentation, and the Organization of Work." American Sociological Review 45 (October 1980): 737-765.

Berg, Ivar. Education and Jobs: The Great Training Robbery. New York: Praeger, 1970.

Berlin, Gordon and Andrew Sum. "Toward A More Perfect Union: Basic Skills, Poor Families and our Economic Future." Occasional Paper 3, Ford Foundation Project on Social Welfare and the American Future. New York: Ford Foundation, 1988.

Berryman, Sue E. "The Economy and American High Schools: What Should We Teach? When? How? To Whom?" Paper prepared for Panel, "Making High Schools Work for Non-College Youth," Tenth Annual Research Conference, Association for Public Policy Analysis and Management, Seattle, Washington, October 27-29, 1988.

Braverman, Harry. Labor and Monopoly Capital. New York: Monthly Review Press, 1974.

Braddock, Douglas J. and Daniel E. Hecker. "The Class of '84 One Year After Graduation." Occupational Outlook Quarterly 32 (Summer 1988): 17-24.

Carnevale, Anthony P., Leila J. Gainer and Ann S. Meltzer. Workplace Basics: The Skills Employers Want. Alexandria, VA: The American Society for Training & Development, 1989.

Clogg, Clifford C. Measuring Underemployment: Demographic Indicators for the U.S. New York: Academic Press, 1979.

Comer, James P. "Educating Poor Minority Children." Scientific American 259 (November 1988): 42-48.

Comer, James P. School Power. New York: The Free Press, 1980.

Committee for Economic Development. Children in Need: Investment Strategies for the Educationally Disadvantaged. New York: Committee for Economic Development, 1987.

Cyert, Richard M. and David C. Mowery (eds.). Technology and Employment. Washington, DC: National Academy Press. 1987.

Duncan, Greg. J. and Saul D. Hauffman. "The Incidence and Wage Effects of Overeducation." Economics of Education Review 1 (Winter 1981): 75-86.

Edwards, Richard C. Contested Terrain. New York: Basic Books, 1979.

Fleishman, Edwin A., and Marilyn K. Quaintance. Taxonomies of Human Performance. New York: Academic Press, 1984.

Flynn, Patricia. M. Facilitating Technological Change. Cambridge, MA: Ballinger, 1988.

Form, William, Robert L. Kaufman, Toby L. Parcel, and Michael Wallace. "The Impact of Technology on Work Organization and Work Outcomes." In Industries, Firms, and Jobs, edited by George Farkas and Paula England, pp. 303-328. New York: Plenum Press, 1988.

Freeman, Richard B. The Overeducated American. New York: Academic Press, 1976.

Fullerton, Jr., Howard N. "An Evaluation of Labor Force Projections to 1985." Monthly Labor Review 111 (November 1988): 7-17.

Fullerton, Jr., Howard N. "Labor Force Projections: 1986 to 2000." Monthly Labor Review 110 (September 1987): 19-29.

Gardner, Howard. Frames of Mind: the Theory of Multiple Intelligences. New York: Basic Books, 1983.

Goldstein, Harold. "The Accuracy and Utilization of Occupational Forecasts." In Robert E. Taylor, Howard Rosen, and Frank C. Pratzner (eds.), Responsiveness of Training Institutions to Changing Labor Market Demands. Columbus, OH: The National Center for Research on Vocational Education, Ohio State University, 1983.

Goldstein, Harold and Byrna S. Fraser. Training for Work in the Computer Age: How Workers Who Use Computers Get Their Training. Washington, DC: National Commission for Employment Policy (June 1985).

Hartog, Joop and Hessel Oosterbeek. "Education, Allocation and Earnings in the Netherlands: Overschooling?" Economics of Education Review 7 (1988): 185-194.

Hodson, Randy, and Robert E. Parker. "Work in High-Technology Settings: A Review of the Empirical Literature." In High Tech Work, edited by Richard L. Simpson and Ida Harper Simpson, pp. 1-30. Greenwich, CT.: JAI Press, 1988.

Hurd, Paul DeHart. "Perspectives for the Reform of Science Education." Phi Delta Kappan 66 (January 1986): 353-58.

Jaikumar, Ramchandran. "Postindustrial Manufacturing." Harvard Business Review 64 (November-December 1986): 69-76.

Johnston, William B. and Arnold E. Packer. Workforce 2000: Work and Workers for the 21st Century. Indianapolis: Hudson Institute, 1987.

Kennedy, Mary M., Richard K. Jung, and Margin E. Orland. Poverty, Achievement and the Distribution of Compensatory Education Services. Washington, DC: U.S. Government Printing Office, 1986.

Lave, Jean, M. Murtaugh, and O. de la Rocha. "The Dialectic of Arithmetic in Grocery Shopping." In Barbara Rogoff and Jean Lave (eds.), Everyday Cognition: Its Development in Social Context. Cambridge: Harvard University Press, 1984.

Leontief, Wassily. "National Perspective: The Definition of Problems and Opportunities." In National Academy of Engineering Symposium, The Long-Term Impact of Technology on Employment and Unemployment. Washington, DC: National Academy Press, 1983.

Levin, Henry M. "Ability Testing for Job Selection: Are the Economic Claims Justified?" In Bernard Gifford (ed.), Test Policy and the Politics of Opportunity Allocation: The Workplace and the Law. Boston: Klewer Academic Publishers, forthcoming.

Levin, Henry M. "Accelerating Elementary Education for Disadvantaged Students." In Council of Chief State School Officers (eds.), School Success for Students at Risk. Orlando: Harcourt Brace Jovanovich, 1988.

Levin, Henry M. "Improving Productivity Through Education and Technology." In Gerald Burke and Russell W. Rumberger (eds.), The Future Impact of Technology on Work and Education. London: Falmer Press, 1987a.

Levin, Henry M. "Accelerated Schools for Disadvantaged Students." Educational Leadership 44 (March 1987b): 19-21.

Levin, Henry M. Educational Reform for Disadvantaged Students: An Emerging Crisis. Washington, D.C.: National Educational Association, 1986.

Levin, Henry M. and Russell W. Rumberger. "Educational Requirements for New Technologies: Visions, Possibilities, and Current Realities." Educational Policy 1 (1987): 333-354.

Levin, Henry M. and Russell W. Rumberger. "Educational Requirements for Computer Use in Small Businesses." Educational Evaluation and Policy Analysis 8 (Winter 1986): 423-434.

Levin, Henry M. and Russell. W. Rumberger. "Educational Requirements for new Technologies and Work Organization." Research proposal submitted to the Spencer Foundation. Stanford, CA: Institute for Research on Educational Finance and Governance, 1985.

Miller, Ann R., et al. Work, Jobs, and Occupations: A Critical Review of the Dictionary of Occupational Titles. Washington, D.C.: National Academy Press, 1980.

Murnane, Richard J. "Education and the Productivity of the Work Force: Looking Ahead." In Robert E. Litan, Robert Z. Lawrence, and Charles L. Schultze (eds.), American Living Standards: Threats and Challenges. Washington, D.C.: The Brookings Institution, 1988.

Murphy, Kevin, and Finis Welch. "Wage Premiums for College Graduates: Recent Growth and Possible Explanations." Educational Researcher 18 (May 1989): 17-26.

National Academy of Sciences. High Schools and the Changing Workplace. Report of the Panel on Secondary School Education for the Changing Workplace. Washington, DC: National Academy Press, 1984.

O'Connor, David. "Technological Change and the Restructuring of the Global Economy in the Post-War Period." In Gerald Burke and Russell W. Rumberger (eds.), The Future Impact of Technology on Work and Education. London: Falmer Press, 1987.

Pallas, Aaron M., Gary Natriello, and Edward L. McDill. "Who Falls Behind: Defining the 'At Risk' Population." Paper presented at the annual meeting of the American Education Research Association, New Orleans, April 13-17, 1988.

Piore, Michael J. and Charles F. Sabel. The Second Industrial Divide. New York: Basic Books, 1984.

Reich, Robert B. Education and the Next Economy. Washington, DC: National Education Association, 1988.

Resnick, Lauren B. Education and Learning to Think. Washington, DC: National Academy Press, 1987.

Rogoff, Barbara and Jean Lave (eds.). Everyday Cognition: Its Development in Social Context. Cambridge: Harvard University Press, 1984.

Rumberger, Russell W. "Second Chance for High School Dropouts: Dropout Recovery Programs in the United States." In Dan Inbar (ed.), Second Chance in Education: An Interdisciplinary and International Perspective. Philadelphia: Falmer Press, forthcoming.

Rumberger, Russell W. "The Definition and Measurement of Workplace Skills." Paper presented at the conference, "Linking Employment Qualifications with Educational Outcomes," Indiana Northwest University, Gary, Indiana, November 18-19, 1988.

Rumberger, Russell W. "The Potential Impact of Technology on the Skill Requirements of Future Jobs." In Gerald Burke and Russell W. Rumberger (eds.), The Future Impact of Technology on Work and Education. London: Falmer Press, 1987a.

Rumberger, Russell W. "The Impact of Surplus Schooling on Productivity and Earnings." Journal of Human Resources 12 (Winter 1987b): 24-50.

Rumberger, Russell W. "High School Dropouts: A Review of Issues and Evidence." Review of Educational Research 57 (Summer 1987c): 101-121.

Rumberger, Russell W. "The Job Market for College Graduates, 1960-1990." Journal of Higher Education 55 (July/August 1984): 433-454.

Rumberger, Russell W. "The Employment Impact of Government Spending." Project Report No. 83-All. Stanford, CA: Stanford Institute for Research on Educational Finance and Governance, May 1983.

Rumberger, Russell W. "The Changing Skill Requirements of Jobs in the U.S. Economy." Industrial and Labor Relations Review 34 (July 1981A): 578-590.

Rumberger, Russell W. Overeducation in the U.S. Labor Market. New York: Praeger Publishers, 1981b.

Rumberger, Russell W. and Henry M. Levin. "Forecasting the Impact of New Technologies on the Future Job Market." Technological Forecasting and Social Change 27 (1985): 399-417.

Sargent, Jon. "A Greatly Improved Outlook for College Graduates: A 1988 Update to the Year 2000." Occupational Outlook Quarterly 32 (Summer 1988): 3-8.

Saxe, Geoffrey B. "Candy Selling and Math Learning." Educational Researcher. 17 (August/Sept. 1988): 14-21.

Schmidt, Frank. L. and John E. Hunter. "Development of a General Solution to the Problem of Validity Generalization." Journal of Applied Psychology 62 (1977): 529-540.

Scribner, Sylvia. "Thinking in Action: Some Characteristics of Practical Thought." In Robert J. Sternberg and Richard K. Wagner (eds.), Practical Intelligence. New York: Cambridge University Press, 1986.

Silvestri, George T., and John M. Lukasiewicz. "Projections 2000: A Look at Occupational Employment Trends to the Year 2000." Monthly Labor Review 107 (September 1987): 46-63.

Slavin, Robert E. and Nancy A. Madden. "What Works for Students at Risk: A Research Synthesis." Educational Leadership 46 (February 1989): 4-13.

Spenner, Kenneth I. "Technological Change, Skill Requirements and Education: The Case for Uncertainty." Paper prepared for Panel on Technology and Employment, National Academy of Sciences, 1986.

Spenner, Kenneth I. "The Upgrading and Downgrading of Occupations: Issues, Evidence, and Implications for Education." Review of Educational Research 55 (Summer 1985): 125-154.

Sternberg, Robert J. "Teaching Critical Thinking, Part 1: Are We Making Critical Mistakes?" Phi Delta Kappan 67 (November 1985a): 194-198.

Sternberg, Robert J. Beyond IQ: A Triarchic Theory of Human Intelligence. Cambridge [Cambridgeshire]; New York: Cambridge University Press, 1985b.

Sticht, Thomas G., et al. Cast-off Youth: Policy and Training Methods From the Military Experience. New York: Praeger, 1987.

Tsang, Mun C. "The Impact of Underutilization of Education on Productivity: A Case Study of the U.S. Bell Companies." Economics of Education Review 6 (1987): 239-254.

Tsang, Mun C. and Henry M. Levin. "The Economics of Overeducation." Economics of Education Review 4(2) (1985): 93-104.

U.S. Bureau of the Census. Educational Attainment in the United States: March 1982 to 1985. Current Population Reports, Series P-20, No. 415. (Washington, DC: U.S. Government Printing Office, 1987).

U.S. Bureau of the Census. Statistical Abstract of the United States 1986. 106th edition. Washington, DC: U.S. Government Printing Office, 1985.

U.S. Bureau of Labor Statistics. Projections 2000. Bulletin 2302. Washington, D.C.: U.S. Government Printing Office, 1987.

U.S. Congress, Office of Technology Assessment. Technology and the American Economic Transition. OTA-TET-283. Washington, D.C.: U.S. Government Printing Office, May 1988.

U.S. Department of Education. Digest of Educational Statistics 1988, CS88-600. Washington, DC: U.S. Government Printing Office, 1988.

U.S. Department of Labor, Department of Education, Department of Commerce. Building a Quality Workforce. Washington, DC: U.S. Government Printing Office, 1988.

U.S. Executive Office of the President, Office of Management and Budget. Budget of the United States Government: Historical Tables. Washington, DC: U.S. Government Printing Office, 1988.

U.S. Government Accounting Office. Bureau of Labor Statistics Employment Projects: Detailed Analysis of Selected Occupations and Industries. Washington, D.C.: Government Accounting Office, 1985.

U.S. Small Business Administration. The State of Small Business: A Report to the President. Washington, D.C.: U.S. Government Printing Office, 1984.

Wagner, Robert K. and Robert J. Sternberg. "Tacit Knowledge and Intelligence in the Everyday World." In Robert J. Sternberg and Richard K. Wagner (ed.), Practical Intelligence. Cambridge: Cambridge University Press, 1986.

Zuboff, Shoshana. In the Age of the Smart Machine. New York: Basic Books, Inc, 1988.

3. TRENDS IN SCIENCE AND ENGINEERING EDUCATION AND THE U.S. LABOR MARKET

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3. TRENDS IN SCIENCE AND ENGINEERING EDUCATION AND THE U.S. LABOR MARKET

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Introduction

This paper addresses the questions whether, and how, the federal government should do more to encourage U.S. students to complete degrees, especially graduate degrees, in science and engineering. It does not present new research, but attempts to summarize what is known on this issue. Science is defined to include all of natural science, including mathematics and computer science, but excluding social and behavioral sciences.

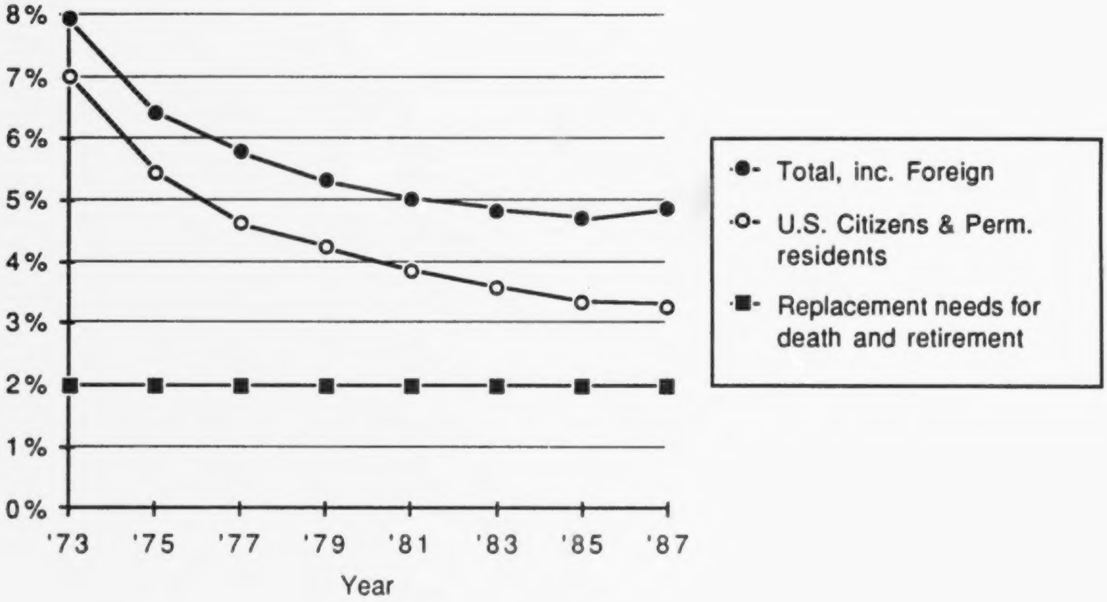
Trends in Science and Engineering Education

Trends in Graduate Student Enrollments

The number of U.S. citizens and permanent residents earning doctorates in science and engineering was 9,724 in 1987. This is only 3.3 percent of the total employed doctorate scientists and engineers in 1987. (See Figure 1) Given that losses due to death and retirement average around 2 percent, the current rate at which U.S. citizens are earning doctorates in science and engineering would not permit growth in doctorate science engineering employment equal to the rate of growth of total science and engineering employment experienced in the recent past or projected for the future [U.S. Department of Labor, 1988]. Ph.D. growth of less than two percent (after replacement of losses due to

Figure 1

New Doctorates as a Percentage of Total Employment of Doctoral Scientists and Engineers, 1973-1987



Source: National Research Council, Survey of Doctorate Recipients and Survey of Earned Doctorates death and retirement) would also be less than half the growth rate of science and engineering Ph.D. employment since 1973, and less than half the growth rate of real basic and applied research expenditures in the U.S. over the past decade [National Science Board, 1987].

The level of science and engineering doctorate awards to U.S. citizens and permanent residents has been constant in the range of 9,300 to 9,900 degrees since 1976. Prior to that the history of awards was erratic: awards increased steadily after World War II to achieve 9,500 in 1968, then they shot up rapidly to 12,500 in 1971 and fell rapidly to about the present level in 1976. Because of foreign student enrollments, total awards have always exceeded awards to U.S. students.

Prior to 1976 a rapid growth of doctorate employment in science and engineering was accommodated by rapid growth in degree awards to U.S. citizens and permanent residents. Since 1976 the number of these awards has been flat but employment has continued to grow, increasing by nearly 50 percent over a decade. This growth in employment in the face of constant degree awards was possible because (1) there was increased employment of foreign national degree recipients with temporary visas, and (2) the current level of degree awards was enough to accommodate substantial growth a decade ago -- because the same level of degree awards then exceeded replacement needs for retirements by a larger margin than at present. Since 1983 the employment of doctorates in science and engineering jobs has increased, but at a slower rate than it did from 1973 to 1983.

Figure 1 illustrates the constraint imposed by constant degree awards in the face of rising total employment. Since replacement needs due to death and retirement average about 2 percent of the doctoral work force, awards to U.S. citizens and permanent residents totaling 3.3 percent are insufficient to allow the doctorate population to grow at the same rate as total employment of scientists and engineers. However, we come closer to having enough to meet the needs of growth and replacement if all doctorate recipients, including foreign students on temporary visas, are available to join the U.S. work force.

Federal Graduate Student Support

Federal support for graduate education grew dramatically during the late 1960s but then fell sharply during the early 1970s. Since the mid-1970s federal support of graduate students in science and engineering has increased moderately. Though this paper defines science to include only the natural sciences, it is relevant to note that during the period since 1975 federal support of social and behavioral science has been cut in half. Thus, modest growth for the natural sciences and engineering have been accomplished in part by reallocation of funds.

Another important trend has been the decline in the relative importance of fellowships and traineeships relative to graduate research assistantships as a support mechanism. When federal fellowship support peaked in 1968 this was the dominant federal mechanism [National Board on Graduate Education, 1974, p. 33]. Since that time there has been a shift towards the use of research grants to faculty. These can employ graduate students as research assistants. This approach assures students are supported in fields where there is federal research interest, and it involves them in research projects. One important difference is that federal fellowships are almost always restricted to persons who are qualified to take employment in the U.S. after graduation, (U.S. citizens and permanent residents) while research assistantships can be and frequently are used to support foreign students on temporary visas.

Foreign students make a great contribution to the U.S. Although information on this is incomplete, it appears that about half of foreign doctorate recipients on temporary visas stay here to work after graduation, clearly increasing the average quality of the workforce [Greenwood and McDowell, 1986; National Research Council, 1988a]. Graduate faculty express some preference for U.S. graduate students, but admit large numbers of foreign students because they feel they need to maintain high quality [Barber and Morgan, 1987]. However, for federal policy makers trying to increase U.S. student involvement in graduate science and engineering education it must be acknowledged that the current support mechanism -- i.e., the graduate research assistantship -- has an important limitation. Even though federal policy makers may have values which differ from graduate faculty regarding the appropriate mix of U.S. vs. foreign students, federal policy makers have little or no control over the mix as long as most students are supported by research assistantships, and research assistants are selected by the faculty.

The lack of federal influence on the mix of students is more obvious when one recognizes that federally supported students make up fewer than 25 percent of all full-time science and engineering graduate students in doctorate granting departments [National Science Board, 1987, p. 205]. As long as others provide the support for most graduate students, a federal preference for U.S. citizens will likely have little effect on the total mix of students -- even if all federal support were subject to U.S. citizenship requirements.

The Labor Market for Scientists and Engineers

Economists have been describing and modelling the labor market for scientists and engineers for three decades [Arrow and Capron, 1959; Hansen, 1961; Folk, 1970; Freeman, 1971; Cain, Freeman and Hansen, 1974; Freeman and Breneman, 1974; Shamia, 1986; Syverson, 1988]. They have established that there is a functioning market; but also, because of the long time needed to educate scientists and engineers, supply responds to changes in demand with a lag. Much of the research literature has discussed the issue of shortages. The consensus view of "shortages" seems to agree with Arrow and Capron, that shortages are a normal part of the process of movement toward equilibrium in a dynamic setting. In this view, shortages are part of the normal operation of the labor market. While this literature documents the influence of government subsidies (e.g., fellowships) for increasing supply, it also suggests a market that is largely self-regulating, i.e., shortages bring forth increases in supply while surpluses bring forth reductions in supply.

Recent studies by the National Research Council and others emphasize the fact that an increase in degree awards is only one of the adjustments to shortages; in the short run there are several other adjustments that frequently occur in the market [National Research

Council, 1986, 1988b; Collins, 1988]. The shortage that signals the need to increase degree awards is usually indicated by a rise in the wage received by scientists and engineers, and sometimes by unfilled job openings as well. These also affect employers' behavior. They may hire fewer scientists and engineers because they cannot find the skills they need, because marginal projects are deemed unprofitable or, if they have a fixed budget, simply because the budget will hire fewer. Other adjustments occur before an increase in degree awards can be fully accomplished. Among the adjustments that have been observed in recent years have been: (1) hiring of persons with different educational backgrounds, (2) less use of scientists and engineers in non-science/engineering jobs, and (3) increased use of foreign scientists and engineers [Finn, 1989]. However, to say that labor markets adjust does not mean that the adjustments are without costs, or that society will be getting an optimal number of scientists and engineers.

Is There a Case for Federal Intervention?

Though academic economists have rather consistently taken the view that the market for scientists and engineers functions reasonably well, public administrators and lawmakers have, almost as consistently, worried about the adequacy of our supply of scientific manpower. They have instructed government agencies to monitor this market, and they have given a mandate to assure adequate supply not only to the National Science Foundation, but also to such mission agencies as the National Institutes of Health and the Departments of Defense and Energy.

Congress has frequently asked for special studies of science and engineering manpower needs. The National Academy of Sciences, with the National Academy of Engineering and the Institute of Medicine, has also recommended that, as a part of the budgeting process, assessments be made of the science and engineering manpower implications of changes in federal spending patterns [National Academy of Sciences, 1988]. Indeed, the request for this paper contains a statement that "One of America's traditional strengths has been the inventive genius of its scientists." The understanding that scientists and engineers play a special role in the U.S. economy is perhaps the reason public officials have been more concerned about assuring an adequate supply of scientists and engineers than have the academic economists.

In the next two sections I review arguments that can be used to justify these concerns. These arguments fall into two general categories. One is that, although the market can be said to work, the delays and the costs to society of various adjustment mechanisms may be too costly to tolerate. Market failure is a general name for the second line of reasoning -- imperfections in the labor market for scientists and engineers may keep the correct adjustments from ever happening.

Science and Engineering Education as a "Public" Good

Many of the benefits of a science or engineering education accrue to the individuals involved (e.g., salary), but some take the character of a public good. The argument here is the same as the argument for public subsidy of R&D because scientists and engineers are major components of R&D expense. Simply put, patents and other mechanisms are inadequate to see that all of the benefits of R&D accrue to those who conduct it. Therefore, the private rate of return on investment in R&D is below the social rate of return [Mansfield, et al., 1977, National Research Council, 1986c]. Because of this gap between the private and social rate of return, society underinvests in R&D unless government intervenes to subsidize R&D or otherwise increase it beyond the level justified by the private rate of return.

Direct subsidy of privately funded R&D does occur (e.g., a federal R&D tax credit), but not enough to eliminate the substantial gap between the private and the social rate of return. Another way to increase R&D may be to increase the supply of scientists and engineers. There are scattered reports of firms that don't perform some research because of a lack of qualified engineers or scientists [Wall Street Journal, 1988]. However, the larger effect must come through salaries. Because B.S. engineers earn relatively high salaries, even higher salaries for doctorates are needed to induce engineers to forego earnings and attend graduate school. These very high doctorate salaries must have the effect of decreasing the amount of R&D performed, an unfortunate event given the high social rate of return on R&D spending.

Current estimates indicate that the social rate of return to academic research is at least 28 percent [Mansfield, 1988]. A tax credit can have little impact on this. However, federal support of graduate students can cause more research to occur from a given level of federal R&D funds. This happens directly from graduate student involvement in research, and indirectly because smaller Ph.D. salaries are needed to attract graduate students when higher levels of graduate student support are available [Shamia, 1988].

Other Market Imperfections

Government cannot cure all market imperfections. Indeed, since Adam Smith, it has been recognized that government has often been the cause of market imperfections. In the case of science and engineering education and labor market imperfections the most often cited problem is that while most science and engineering specialties earn top salaries, public institutions tend to eschew the use of these market signals in setting tuition levels, stipends and wages. Thus we see,

- A single uniform teacher salary schedule in most school districts, with the result that teachers who have math, computer and physical science skills are underpaid relative to their market wage more often than other teachers in the same districts [Murnane and Olsen, 1988].
- Pay caps in the federal government mean that the highest paid specialties (science and engineering) are often paid below market wages [National Research Council, 1988c]. Federal laboratories offer below market starting salaries in some high wage fields, e.g., engineering, in spite of "special rates" [National Research Council, 1983, p. 18].
- Salary compression at universities. Some colleges and universities use uniform salary policies, just like pre-college schools, and most of those lacking uniform salary policies compress market salary differences so that they are not as

great in the public and non-profit sectors as in the private sector where the market is allowed to work more freely.

- Uniform tuition policies. These tend to benefit those admitted to science and engineering departments (where costs are above average) but they also mean that the colleges and universities are often unable or unwilling to expand enrollments in high cost departments.
- Uniform stipends for graduate students and postdoctoral students. While there is some variation in stipends in some programs and universities, many programs offer stipends that do not vary by discipline [National Research Council, 1988d; Nelson, 1988].

This recitation of market imperfections is not intended to suggest that such imperfections are universal or that we have documented widespread impacts. For example, a recent study concludes that the uniform wage policy in our public elementary and secondary schools causes high turnover of science teachers [Murnane and Olsen, 1988]. However, our understanding of the educational process is such that we can not clearly establish whether this high turnover, in turn, causes a decrease in student learning or interest, though it seems plausible that it would.

Federal Use of Scientists and Engineers

The federal government and its contractors have an atypical labor force in that it includes a high proportion of scientists and engineers. Intervention to increase the supply of scientists and engineers will tend to increase the quality and/or lower the cost of these personnel to the federal government and its contractors. The case for federal support is most obvious in sub-disciplines like aerospace/aeronautical engineering where 76 percent of employed persons with graduate degrees are employed in work supported by the federal government. However, 35 percent of natural scientists and 36 percent of engineers with graduate degrees were so employed in 1984 [Finn, 1988].

Problems with Reliance on Foreign Labor

Foreign nationals are not employed by the federal government, and by law can not be given access to certain technologies classified as sensitive from a national security perspective. Jobs performed by scientists and engineers with graduate degrees are among the most important and sensitive to our military and technological competitiveness. Currently, because of the shortage of U.S. citizens, U.S. employers depend on foreign nationals for a very substantial part of the new entrants to the work force. For engineering and computer science Ph.D.'s, 37 percent of recent new entrants to the workforce have been foreign nationals, and their representation among new engineering faculty is even higher [Finn and Clark, 1988; National Research Council, 1988a]. In the mathematical and physical sciences about 18 percent of new entrants to the doctorate work force were foreign nationals [Finn and Clark, 1988]. Those who question the wisdom of the U.S. economy's increasing reliance on foreign scientists and engineers also note that much of the immigration comes from countries which are rapidly increasing in technological sophistication and manufacturing exports. Already some immigrants with experience in U.S. industry are emigrating, and there is concern that increasing reliance on immigrants may leave the U.S. vulnerable if these scientists and engineers should choose to work outside the U.S. in the future.

Shortages of Scientists and Engineers

Though shortages are not widespread at present, significant shortages have persisted in some fields for some time. The evidence cited below may be viewed as the empirical manifestation of the market imperfections cited above.

One source of information on shortages of scientists and engineers during the 1980s is a survey of employers conducted by NSF nearly every year since 1980 [National Science Foundation, Division of Science Resources Studies]. The NSF employer survey indicated severe shortages of most engineering and some science occupations at the beginning of the decade. By the mid-1980s the survey reported a substantial decline in the proportion of employers reporting shortages, but there were a few fields where more than 10 percent of firms reported shortages (e.g., electrical and nuclear engineering). The general picture given by these surveys is that shortages have persisted in only two fields (electrical engineering and computer science), but there have been significant, albeit temporary, shortages in other fields. Only a few fields have been relatively free of reports of shortages (e.g., biology) but even in these there is evidence that there have been and continue to be shortages in some of the specialties related to biotechnology [U.S. Congress, Office of Technology Assessment, 1988b, p. 135].

A similar survey was conducted for employers of engineers by the National Research Council [National Research Council, 1985, pp. 63-67]. It found that half or more of employers found it "difficult" or "very difficult" to hire quality recent graduates in the fields of computer, electrical, electronic, and mechanical engineering, and that at least 25 percent of employers reported this for every field except civil engineering where 15 percent of employers reported shortages [National Research Council, 1985b, pp. 66-67].

Data on the federal workforce provides a similar picture of shortage conditions. The Office of Personnel Management identifies job categories in the federal government that are difficult to fill, and this information is used to set "special rates" for selected fields. Fields which have been so identified during the 1980s include virtually all fields of engineering and many fields of science. At present, the list of special rates includes a wide variety of occupations in select (usually high cost) locations. However, engineers dominate the list of occupations for which such "special rates" have been authorized worldwide or nationwide. Within this group, nuclear, electrical, computer and electronic engineers qualify for the highest rates [U.S. Office of Personnel Management, 1989].

Similar data is collected from universities in a survey conducted by the American Council on Education. Their latest survey asked a sample of 357 institutions of higher education whether they were experiencing shortages in specific disciplines. For this survey shortage is defined to exist when the university is currently unable to find qualified applicants for vacant faculty positions. Two-thirds or more of the doctoral institutions reported shortages in three disciplines: engineering, computer science and business. Other disciplines where more than 20 percent of institutions reported shortages were physical science (22 percent) and mathematics (30 percent). In contrast, fewer than 10 percent of the doctoral institutions reported shortages in arts and humanities, foreign languages, social sciences, education, and vocational-technical fields [El-Khawas, 1988].

There have also been a series of surveys of engineering faculty vacancies. Since 1980 the survey reported a vacancy rate in the range of 7 to 10 percent for funded engineering faculty positions [Atelsek and Gomberg, 1981; Doigan, 1984, 1989]. This has been widely interpreted as a sign of a rather severe shortage of engineering faculty. However, it is difficult to interpret because we don't know what the "natural" vacancy rate is, i.e., the rate that would still prevail if the supply of engineering teachers were fully adequate.

Taken as a whole these direct measures of shortage find no general, persistent shortage of all categories of scientists and engineers but do find that there have been frequent shortages in computer science and engineering, and occasional shortages in other categories, most frequently in mathematics, environmental and physical sciences.

Adjustments to Shortage

In this section I cite empirical evidence for several adjustments which have resulted from employers actions to avert shortages of scientists and engineers.

Salaries

A recent OTA report concluded that, "...although salaries are not increasing -- a sign of steady supply -- at all degree levels scientists and engineers enjoy the highest average starting salaries relative to other fields" [U.S. Congress, 1988a]. This general assessment can be corroborated by data from other sources [Korb, 1987; National Science Board, 1987]. We might disagree about salaries not increasing; there is evidence of at least a modest increase in science and engineering salaries relative to the earnings of all workers in private industry [National Research Council, 1988b, p. 48]. However, it is the level of salaries which is noteworthy, not their degree of change in recent years.

Some observers (focusing on the relative stability of science and engineering salaries) have interpreted this salary picture as indicating a lack of general "shortage." This is consistent with one use of the term "shortage." However, it does not necessarily mean that there is not a need for more scientists and engineers to be educated. The problem seems to be knowing what to make of the high salaries paid to engineers and most scientists. Do these high salaries indicate we should train more people in science and engineering disciplines? And if engineers have the highest paying jobs, why do fewer than 10 percent of college freshmen say they want to major in engineering? Clearly, we have to deal with the fact that the science and engineering disciplines are difficult courses of study. Successful engineering students are among the most able in their age cohort with high ability in science and math as well as strong verbal skills [National Research Council, 1985, p. 75]. Indeed, science and engineering disciplines in general, and especially the highest paying fields (engineering, math, computer and physical science) attract students with very high ability, especially quantitative ability [Hartnett, 1985]. No doubt some of the salary differential enjoyed by these graduates is a reflection of this ability.

Until recently I knew of no research which could be used to test whether the earnings of science and engineering graduates was superior to the earnings of other graduates after controlling for ability. However, an important study was recently completed using the 1986 follow-up study of the high school class of 1972 [James, et al., 1988]. This study controlled for ability using the students' SAT scores and also controlled for other background variables. It examined earnings in 1986, about 9 to 10 years after a typical student in the class of 1972 would have completed the bachelor's degree. It found that engineering graduates earned the highest salaries and that science and math majors earned above average salaries. Significantly, it also controlled for math courses taken in college so that these returns to the majors were over and above the return to taking math courses which science and engineering majors take in substantial numbers. To the extent that salaries indicate productivity it provides evidence that math courses and that science and math majors provide additional productivity compared with the education of other college students. The study also found a high positive return to the business major. Business and engineering were the highest paying undergraduate majors after controlling for ability, math courses taken and other factors. However, it found that business majors earned a differential only when they obtained management jobs. Engineering majors, in contrast, earned substantially the same large differential even when employed in non-engineering jobs. This is significant because the high school class of 1972 selected their majors during the early 1970s, a time when there was a relatively weak labor market for engineers and physical scientists. The finding that engineering majors do well even when they take non-engineering jobs is important because it means that the payoff from this investment is not dependent on the state of the somewhat cyclical engineering labor market.

Other studies confirm the finding that engineering graduates earn high salaries even when they take non-engineering jobs. One is a follow-up study of 1983-84 bachelors graduates conducted by the U.S. Department of Education [Korb, 1987]. The same was generally true of mathematics, computer science, and physical science majors except for the approximately 9 percent in these majors who took jobs as teachers. (This is probably due to the fact that most elementary and secondary schools have uniform pay policies, i.e., do not adjust pay to the market opportunity costs of different majors).

I conclude that the high salaries earned by most scientists and engineers do indeed indicate what seems to be a productivity differential apart from the ability of the students who currently major in those fields. There is fairly strong evidence to support the view that the productivity of the U.S. economy would be enhanced if more students who would otherwise major in other fields switched into science or engineering or took more mathematics courses in undergraduate school. One possible exception to this statement is biological science. At the B.S. level Korb found that 45 percent worked full-time after graduation and only the 13 percent of these working as biological scientists or health professionals earned salaries comparable to those of other science majors [Korb, 1987, p. 10]. Most took jobs that do not typically require a college degree and earned substantially less. This is confirmed by NSF surveys of recent science graduates which typically show that B.S. and M.S. life scientists earn substantially less than other B.S. and M.S. graduates in the sciences, and also that many take jobs outside of science or engineering [National Science Foundation, 1986].

Unemployment and Underemployment Rates

Unemployment rate for scientists and engineers have fallen to half the level of the mid-1970s [National Research Council, 1986, p. 73]. The rate for scientists and engineers are substantially below the unemployment rate for the labor force as a whole, and below the unemployment rate for all college educated workers. In 1986 the unemployment rate for scientists was under 2 percent and the unemployment rate for engineers was only 1.3 percent [National Science Foundation, 1987a, pp. 169-170].

NSF also computes an underutilization rate, which counts as underutilized not only the unemployed but also those who are working part-time when they would prefer full-time jobs and those who are working outside science and engineering when they would prefer to work in science or engineering. In 1985 the underutilization rate for doctoral scientists and engineers was about 2 percent, with the following fields well below 2 percent: physics, mathematical sciences, computer sciences and engineering [National Science Foundation, 1987, pp. 173-177].

Immigration

Entry of non-U.S. citizens into the U.S. labor market for scientists and engineers has been an important mechanism for averting shortage of advanced degree holders. At the doctorate level, engineering is the field that is most dependent on foreign nationals. They have supplied 37 percent of new entrants to the U.S. labor market for Ph.D. engineers and computer scientists in recent years. Mathematics is similar to engineering in this regard, but mathematics and physical sciences combined depend on foreign nationals for about 18 percent of new entrants to the Ph.D. market [Finn and Clark, 1988]. Mathematics and engineering both award 50 percent or more of new doctorates to foreign nationals [National Research Council, 1989]. While U.S. citizens still predominate in the sciences, foreign students are a high and growing proportion of graduate students in most fields. Nearly all of the fields with especially high foreign enrollments are fields where U.S. enrollments have declined since the peak enrollments of the 1968-72 period. Thus, the willingness of top-notch foreign students to study in the U.S. is filling a number of gaps. They provide students when U.S. students seem not to be motivated to complete graduate study. They have allowed many academic departments to maintain or even raise their already high standards of excellence. Finally, because half or more of the foreign graduate awardees enter the U.S. workforce, they also make very valuable inputs into the labor market. A committee of the National Research Council examined this phenomenon in engineering and was convinced that it is in the U.S. interest to have these foreign students stay in the U.S. to work. However, the same committee also recognized possible problems with increased reliance on foreign students and recommended that increased numbers of U.S. students be encouraged to earn doctorates in engineering [National Research Council, 1988a].

Employment Growth Faster than Degree Growth

Over the entire period since 1972 it is estimated that engineering job openings due to growth (i.e., excluding replacement needs) have exceeded the total number of degree awards in engineering [National Research Council, 1988b]. With science it is more difficult to compare employment growth with degree growth because the correspondence between degree field and employment field is normally much less. However, to some extent it appears that there is so much substitution among fields like mathematics, engineering, physics and computer science that it is necessary to lump all natural science and engineering fields together to ask whether employment growth is outstripping the output of the educational pipeline. The National Science Foundation has done this, focusing on the fact that smaller cohorts are now passing through the educational "pipeline" [National Science Foundation, 1987b]. That NSF report shows that if the proportion of 18-22 year olds who earn degrees in science and engineering fields does not increase substantially, then the slow growth of projected college enrollments means that B.S. awards in science and engineering fields will decline substantially over the next decade. In contrast the Labor Department has projected that total employment will grow 13 percent in a low growth scenario and 19 percent in a moderate scenario from 1986 to 2000, while during the same period employment of scientists and engineers is expected to grow 28 percent in a low growth scenario and 49 percent in a moderate growth scenario [U.S. Department of Labor, 1988]. This is a remarkable contrast: a decline in B.S. degree awards while at the same time we have a 49 percent increase in employment! The disparity sounds too great to believe at first glance and deserves careful attention.

Some would say that the BLS projections have been wrong in the past, and, given the inherent difficulty in making forecasts of employment by occupation we should not rely on them in the future. To these criticisms defenders of the BLS forecasts can point out that the 19 percent employment growth projected from 1986-2000 is really partly based on reliable population projections and fairly reliable projections of labor force participation rates. The fact that the employment of scientists and engineers is expected to increase much faster than the total is just a reflection of the increasingly technological nature of our economy. BLS's highest rates within science and engineering are for electrical engineers, computer specialists, and systems analysts; thus it is merely assuming a continuation of recent trends. Further, an analysis of past BLS forecasts for engineers found no systematic bias for the mid-case scenarios to be high or low in past projections [Dauffenbach, 1986]. Thus, we must judge the BLS forecast to be very plausible.

The NSF scenario that indicates declining degree awards in science and engineering fields, can be criticized as being a manifestation of demographic determinism. However, this criticism would be valid only if applied to a deterministic version of the analysis, one which says that shortages are inevitable. The best use of the analysis is to point out that the United States risks shortages of scientists and engineers during the 1990s unless we find a way to increase the proportion of college graduates who earn degrees in science and engineering, or increase the mathematics and science knowledge of graduates in other majors. The growth in employment projected by the BLS could be frustrated if this does not happen, or, at the least, employers of scientists and engineers would have to make adjustments to a threatened shortage such as increasing the proportion of science and engineering hires that come from occupational mobility, hiring new graduates in non-science and engineering fields, or increasing the hiring of foreign nationals [Collins, 1988].

It can be argued that our economy can cope with these problems during the 1990s just as it has during the 1980s. Indeed, a recent inquiry by the National Research Council failed to find severe quality problems in the engineering labor force that occurred from the adjustments to shortage that occurred during the 1980s [National Research Council, 1988b]. However, the National Research Council studies concluding that we coped with the shortfall of U.S. citizen engineers during the 1980s have also indicated that there is a need to train more U.S. students in science and engineering fields. They have recommended that, while the influx of foreign scientists and engineers has been beneficial, we should nevertheless increase the supply of U.S. citizens going into these fields. Separate studies of physics and mathematics have also called for increased degree awards [National Research Council, 1984, 1986b].

The NSF analysis suggests there may be a need for federal government action to increase the number of U.S. citizens enrolling in science and engineering at virtually all levels. While college enrollments may hold up in spite of the declining number of 18-22 year olds, all plausible projections of college enrollments suggest that they will grow very little if at all during the next 5-10 years because of the reduced number of 18-22 year olds, the demographic trough following the peak of the baby boom [Gerald, et al., 1988, Ahlburg et al., 1981]. Thus, if the number of science and engineering graduates is to grow roughly in proportion to the needs of the economy between now and the end of the 1990s, then the proportion of 18-22 year olds earning bachelors degrees in science and engineering fields will have to increase to historically high levels [NSF, 1987b, p. 5]. Increasing female participation in science and engineering was responsible for attaining the historically high proportions of 18-22 year olds earning science and engineering degrees in 1984. Since the rise in female participation seems to have stalled, further increases are questionable unless increased efforts are made to prepare more young students for science and engineering careers. Proportional growth of Ph.D.'s in science and engineering fields would not require breaking into new territory -- only a return to higher ratios of doctorates to the relevant population group (25 to 34 year olds) that were experienced during past periods of strong federal support for science and engineering graduate students.

Conclusion

No one understands student choice and behavior well enough to say with precision that U.S. graduate enrollments in science and engineering will not increase by a substantial margin without additional intervention. In fact, science and engineering degree awards in 1987 edged up slightly from the remarkably stable level held for the previous decade. However, there are reasons to suspect that we will experience less market response than we have in the past. One is the recent (1986) tax law change which makes taxable many graduate school stipends which had been previously been tax free (e.g., fellowships and graduate research assistantships). Another is the presence of large numbers of foreign doctorate recipients. To the extent they stay in the U.S. in greater numbers than at present they will help to moderate salary increases that would otherwise signal more young U.S. citizens to enter graduate school.

I conclude that we need to equip and encourage more U.S. students to enter graduate school, especially in engineering, mathematics and the physical sciences. The mention of specific disciplines is done with some hesitation. There is not a convincing case that the federal government can or should attempt to "fine tune" the labor market by adjusting supply to projected future demand in specific fields. However, there is a case for general support of science and engineering to increase supply. This case is strongest for the fields of engineering, mathematical, computer and physical sciences because there is evidence that market imperfections are causing greater problems in these fields.

Policy Options

This section outlines major policy options available to the federal government if it chooses to take further action to increase the supply of U.S. scientists and engineers. This is necessarily an incomplete overview. Just to catalogue current federal training programs would take much more space than is available here if we wanted to view them with the detail needed to understand important differences. Further, it should be recognized that my statement of the advantages and disadvantages of these options is of necessity often based on my own judgments as there is an inadequate research base for judging the effects of different policies to increase the supply of scientists and engineers.

Graduate Fellowships and Traineeships

A well established approach for increasing the supply of doctorates is to increase federally funded fellowships. One of the "key findings" of a recent Office of Technology Assessment study is that,

> "Federal funding has a direct positive effect on Ph.D. production. Fellowships and traineeships in particular have been a straightforward way to increase Ph.D. production in science and engineering" [U.S. Congress, 1988a, p. 68].

Pros

This is a proven approach with well established mechanisms. Administrative costs are reasonable. Fellowships tend to attract the best students and to draw attention to the fields where they are located (e.g., science and engineering generally in the case of NSF fellowships; specific disciplines or technologies in the case of fellowships from mission agencies such as DOE, DoD, NASA and NIH.) There is ample evidence that fellowship students finish faster, and have greater early career success than non-fellowship students [Harmon, 1977; Coggeshall and Brown, 1984; Snyder, 1988]. Of course, fellowship students are usually superior students to begin with, but there is some evidence that federal fellowship winners achieve somewhat higher success than other comparable students who are not recipients [Snyder, 1988]. Another advantage of this form of support from the point of view of national policy makers is that the criteria for awards can be specified by law (e.g., restrict to U.S. citizens, assure geographical balance within U.S.).

Cons

Apart from cost there are few drawbacks from national fellowship programs. Critics might argue that their reputed effectiveness in increasing degree awards is based on rather weak empirical evidence -- the correlation of fellowship growth and enrollment growth does not necessarily indicate that the fellowships caused the enrollment growth. Another reason to be wary of a large build up of fellowships is the fear of program inertia -- fellowship programs might encourage movement into science even after the supply is adequate. However, this kind of criticism seems most appropriate for a massive program or an attempt to fine tune supply to meet demand. A typical current proposal, the engineering deans' recommendation for a doubling of engineering fellowships [Engineering Deans' Council, 1988] would really be a marginal change since fewer than 2 percent of engineering graduate students have been supported by federal fellowships in recent years [National Research Council, 1988a, p. 94].

Traineeships differ from fellowships primarily in that the government makes awards to specific academic departments which in turn make awards to individual graduate students. Traineeships do not usually carry the prestige of nationally competitive fellowships. However, winners of competitive fellowships tend to attend graduate schools which already attract the nation's best students. If

Congress wants to disperse talent among a greater number of graduate schools, then traineeships offer an advantage over portable fellowships. The department of Health and Human Services uses this mechanism extensively. Other federal agencies (e.g., NSF) used this mechanism extensively in the past and are now considering its use again, in light of a perceived need for increased graduate student support. About 20 percent of federally supported graduate students were supported by traineeships in 1985 [Finn, 1988].

Research Assistantships

Federal research grants made to universities support graduate students (and a few undergraduates) as research assistants. This mechanism has increased greatly in relative importance since the early 1970s and now supports about 80 percent of the graduate students now receiving federal funding [National Science Board, 1987].

Pros or Cons?

Nearly all of the distinguishing characteristics of this mechanism may have effects that might be argued as pros by some and cons by others. For example, graduate assistants are selected by the professors who employ them. Thus, student support is tied to research. This has positive and negative effects. On the positive side we might cite the assurance that the student is involved in research. However, this system ties student support to research priorities, which do not always change in line with student support needs.

Research grants are a very indirect way of aiding students, and the number of students aided can be less than expected. Consider engineering where there was a recognized Ph.D. shortage at the beginning of this decade. Because of special efforts from NSF, DoD and other federal agencies the amount of federal funding for engineering R&D in universities increased 13.3 percent in real terms from 1979-1985. However, much of this funding was used up to finance increasing salaries for engineering faculty (up 20.8 percent over the same period). The number of federally supported graduate students increased by a much smaller proportion than funding (only 5.2 percent) over the same period. Engineering was not atypical in this respect [Finn, 1988b, p. 7].

Also debate arises from the fact that research grants place the selection of federal student aid recipients in the hands of the university. While there are undeniable merits to this approach it reduces the ability of national authorities to influence selection. Furthermore, the federal government's interest in the mix of students may differ from the mix of students generated by the sum of many local graduate student aid decisions. For example, in recent years foreign nationals earning Ph.D. degrees in engineering, mathematics and computer sciences have been virtually assured that they could be granted immigrant (i.e., permanent resident) status if they wished because the number of U.S. citizens graduated was small both in relation to total employment and in relation to the total number receiving doctorates.

In spite of weaknesses in reliance on research assistantships for graduate student support, the R&D program of the federal government is a major source of direct graduate student support. Further, the level and distribution of R&D spending shapes the job market for scientists and engineers and can indirectly affect future supply. Increased stability, possibly through the mechanism of multi-year budgeting can improve the effect of R&D funding on supply [National Research Council, 1986, p. 41].

Forgivable Loans

Loans are not widely used as a means for financing graduate education in science and engineering. In 1987 most Ph.D. recipients had no debt at graduation, and those who did reported a median debt level of only $7,112 [National Research Council, 1989]. However, loans have been an important part of the graduate student aid package in the past. One example is the Ford Foundation forgivable loan program in Engineering. This program helped more than 900 persons earn Ph.D.'s in engineering. A study undertaken after it was terminated in 1966 indicated that it was effective in increasing the supply of Ph.D.'s for faculty positions, in part by facilitating the graduate education process of those already inclined toward teaching, rather than diverting to teaching those people whose original goals were non-academic [National Research Council, 1970, p. 22].

Pre-College Programs

Only a tiny portion of those getting bachelors degrees in science and engineering go on for doctorates. The supply of Ph.D. engineers would more than double if the proportion of B.S. degree recipients in engineering who go on to a Ph.D. were to return to the proportion experienced 20 years ago. This illustrates that the shortage of doctorates experienced at present is not simply the result of too few students in science or engineering at lower levels. Nevertheless, increasing the science and mathematics achievement of precollege youths is an important policy option because (a) it will make our graduate school problem easier, and (b) because there are great benefits to society from increasing the proportion of bachelors recipients who take mathematics courses and/or major in science and engineering.

Federal intervention at the pre-college level tends to have a limited effect because many important concerns (e.g., course requirements and teacher salaries) are within the domain traditionally controlled by state and local authorities. The kinds of actions traditionally engaged in by the federal government have included curriculum development and research and summer institute programs for high school teachers and top high school students, dissemination activities, and student enrichment programs e.g., the 4-H program of the U.S. Department of Agriculture supported by federal agencies [U.S. Congress, Office of Technology Assessment, 1988c, pp. 109-131].

Undergraduate Education

The federal Government spends about $10 billion on undergraduate student aid, but with few exceptions this vast sum is distributed without any expression of preference towards the undergraduate student major. One of the exceptions to this generalization is the Minority Access to Research Careers (MARC) program of the National Institutes of Health. An evaluation by the National Research Council showed this to be effective in increasing minority participation in science [Garrison and Brown, 1985]. Further, it found that a feature which this program shares with many other federal undergraduate science programs, student participation in off-campus research, was cited by students as the most influential aspect of the program. These findings suggest that an expansion of federal programs like the MARC program would be effective in increasing undergraduate science education, as would expanded efforts like the Department of Energy's programs to involve bright undergraduates in federal laboratory research [U.S. Department of Energy, 1988]. So too would an effort to link part of current need or merit based programs to science or engineering study, or to create new programs to support undergraduate science and engineering students [U.S. Congress, Office of Technology Assessment, 1988a, p. 96].

However, it should be noted that enrollments in some fields with the strongest job markets (e.g., electrical engineering and computer science) seem to be limited by capacity in most universities. For these fields an expansion of Ph.D. degrees and financial aid which helps the college or university acquire faculty and equipment is likely to be more effective than programs to stimulate student interest.

Tax Incentives

The federal tax treatment of tuition paid by employers and of stipends paid to students clearly affects the after tax cost of education. There is ample evidence that enrollment and degree completion is affected by the level of tuition at the undergraduate level, but the evidence for graduate students is mixed [Finn, et al., 1988]. Nevertheless, the Engineering Deans' Council recommended that the federal government should restore tax exclusion for both tuition remission and graduate student stipends [Engineering Deans' Council, 1988, p. 780].

Employee Educational Assistance

Employers currently support graduate science and engineering education for their employees in a number of ways. For example, they pay all or part of tuition costs and sometimes give release time for classes. All employers could be given greater incentive to help employees return to graduate school for full or part-time study by paying tuition and living expenses. Expansion of such benefits for federal employees and employees of federal laboratories might not only increase degree awards, but also increase the attractiveness of federal employment and the quality of the federal work force.

Preferential tax treatment of student stipends and of employer educational assistance have in the past been available to all students. It might be very expensive to reinstate such tax treatment for all in terms of the size of the impact on science and engineering enrollments. This may well be justified because of the need for more U.S. graduate students in other disciplines, but that is beyond the scope of this paper.

REFERENCES

Ahlburg, Dennis, Eileen M. Crimmins, and Richard A. Easterlin, "The Outlook for Higher Education: A Cohort Size Model of Enrollment of the College Age Population, 1948-2000", Review of Public Data Use, Winter 1981, 9, 21-27

Arrow, Kenneth J., and William M. Capron, "Dynamic Shortage and Price Rises: the Engineer-Scientist Case", Quarterly Journal of Economics, (May 1959), 292-308.

Atelsek, Frank A. and Irene L. Gomberg, Recruitment and Retention of Full-time Engineering Faculty, Washington, D.C.: American Council on Education, October 1981

Barber, Elinor, G., and Robert P. Morgan, "The Impact of Foreign Graduate Students on U.S. Engineering Education", Science, 236(April 3, 1987):33-37.

Cain, Glen, Richard B. Freeman, and W. Lee Hansen, Labor Market Analysis of Engineers and Technical Workers, Baltimore, MD: The Johns Hopkins University Press, 1974.

Coggeshall, Porter, and Prudence Brown, The Career Achievements of NIH Predoctoral Trainees and Fellows, Washington, D.C.: National Academy Press, 1984

Collins, Eileen, "Meeting Scientific and Technical Staffing Requirements of the American Economy", Science and Public Policy, 5(October 1988): 335-342.

Dauffenbach, Robert, C., "Education, Mobility and Policy Issues Related to Future Engineering Employment Trends", in L.M. Blair and L. Smalley, Eds., Science and Engineering Manpower in Energy: Labor Market and Education Issues and Outlook, Washington, D.C.: U.S. Department of Energy, DOE/ER/-0300, October 1986

Doigan, Paul, "ASEE Survey of Engineering Faculty and Graduate Students, Fall 1983", Engineering Education, October 1984

Doigan, Paul, "Engineering and Engineering Technology Supply and Demand", paper presented at a conference of the American Society for Engineering Education, New Orleans, Feb. 1-3, 1989

El-Khawas, Elaine, Campus Trends, 1988, Higher Education Panel Report #77, September 1988, Washington, D.C.: American Council on Education, 1988

Engineering Dean's Council of the American Society for Engineering Education, "Findings and Recommendations From the Report of the Task Force on the Engineering Student Pipeline", Engineering Education, May 1988, pp. 778-780.

Finn, Michael G., et al., "Literature Review of Selected Topics Relating to the Recruitment and Education of Science and Engineering Students", Oak Ridge, TN: Oak Ridge Associated Universities, (working paper)1988

Finn, Michael G., "Federal Support of Graduate Students in Science and Engineering: Current Efforts Versus Labor Market Needs", Oak Ridge, TN: Oak Ridge Associated Universities, (working paper) 1988

Finn, Michael G. and Sheldon B. Clark, "Estimating Emigration of Foreign-Born Scientists and Engineers to the United States", Oak Ridge, TN: Oak Ridge Associated Universities, (working paper) January 1988

Finn, Michael G., "The Labor Market for Engineering and Technology", paper presented at a conference of the American Society for Engineering Education, New Orleans Feb.1-3, 1989

Folk, Hugh, The Shortage of Scientists and Engineers, Lexington, MA: D.C. Heath and Company, 1970

Freeman, Richard B., The Market for College Trained Manpower: A Study in the Economics of Career Choice, Cambridge, Massachusetts: Harvard University, 1971

Freeman, Richard, B., and David Breneman, Forecasting the Ph.D. Labor Market: Pitfalls for Policy, Washington, D.C.: National Board on Graduate Education, Technical Report Number 2, April 1974

Debra E. Gerald, Paul J. Horn, and William J Hussar, Projections of Education Statistics to 1997-98, (Washington, D.C.: U.S. Government Printing Office)National Center for Education Statistics Publication (CS88-607).

Garrison, Howard, and Prudence Brown, Minority Access to Research Careers: An Evaluation of the Honors Undergraduate Research Training Program, Washington, D.C.: National Research Council, Institute of Medicine, 1985

Greenwood, Michael J., and John M. McDowell, "Factor Market Consequences of U.S. Immigration", Journal of Economic Literature, December 1986, XXIV(4), pp. 1738-1772

Hansen, W. Lee, (1961), "The 'Shortage' of Engineers", The Review of Economics and Statistics, 43, pp. 251-256

Harmon, Lindsey, R., The Ford Foundation Forgivable Loans in Support of Graduate Education in Engineering -- A Program Evaluation, Washington, D.C.: National Research Council, Office of Scientific Personnel, May 1970.

Harmon, Lindsey R., Career Achievements of NSF Graduate Fellows: The Awardees of 1952-1972, Washington, D.C.: National Academy Press, 1977

Hartnett, Rodney T., Trends in Student Quality in Doctoral and Professional Education, NJ: Rutgers University, 1985

James, Estelle, et al., "College Quality and Future Earnings: Where Should You Send Your Children to College", paper presented at the meetings of the American Economics Association, New York, NY, December 1988, published in, American Economic Review, Papers and Proceedings, May 1989, pp. 247-252

Korb, Roslyn A. Occupational and Educational Consequences of a Baccalaureate Degree, Center for Education Statistics, (Washington, D.C.: U.S. Government Printing Office) March 1987

Mansfield, Edwin, "The Social Rate of Return", unpublished paper, 1988

Murnane, Richard J., and Randall J. Olsen, "Will There be Enough Teachers?", paper presented at meetings of American Economics Association, New York, N.Y., December 1988, published in, American Economic Review, Papers and Proceedings, May 1989, pp. 242-246

National Academy of Sciences, Federal Science and Technology Budget Priorities: New Perspectives and Procedures, Washington, D.C.: National Academy Press, 1988

National Board on Graduate Education, Federal Policy Alternatives toward Graduate Education, Washington, D.C.: National Academy of Sciences, 1974

National Research Council, The Professional Environment in Army Laboratories and It's Effect on Scientific and Engineering Performance, Washington, D.C.: National Academy Press, 1983

National Research Council, Renewing U.S. Mathematics: Critical Resource for the Future, Report of the Ad Hoc Committee on Resources for the Mathematical Sciences of the Commission on Physical Sciences, Mathematics and Resources, Washington, D.C.: National Academy Press, 1984

National Research Council, Office of Scientific and Engineering Personnel, Labor Market Conditions for Engineers: Is There a Shortage?, Washington, D.C.: National Academy Press, 1984.

National Research Council, Commission on Engineering and Technical Systems, Engineering in Society, Washington, D.C.: National Academy Press, 1985a

National Research Council, Commission on Engineering and Technical Systems, Engineering Employment Characteristics, Washington, D.C.: National Academy Press, 1985b

National Research Council, The Impact of Defense Spending on Nondefense Engineering Labor Markets, Washington, D.C. National Academy Press, 1986

National Research Council, Physics Through the 1990s: An Overview, Washington, D.C.: National Academy Press, 1986b

National Research Council, The Federal Role in Research and Development -- Report of a Workshop, Washington, D.C. National Academy Press, 1986c.

National Research Council, Office of Scientific and Engineering Personnel, Foreign and Foreign-Born Engineers in the United States, Washington, D.C.: National Academy Press, 1988a

National Research Council, The Effects of Quality on Adjustments in Engineering Labor Markets, Washington, D.C.: National Academy Press, 1988b

National Research Council, A Healthy NIH Intramural Program: Structural Change or Administrative Remedies? Washington, D.C.: National Academy Press, 1988c

National Research Council, A Selected List of Fellowship Opportunities and Aids to Advanced Education for United States Citizens and Foreign Nationals, Washington, D.C.: National Science Foundation, 1988d

National Research Council, Summary Report -- 1987, Doctorate Recipients from United States Universities, Washington, D.C.: National Academy Press, 1989

National Science Board, Science and Engineering Indicators, 1987, Washington, D.C.: U.S. Government Printing Office, 1987

National Science Foundation, Characteristics of Recent Science/Engineering Graduates: 1984, Washington, D.C.: National Science Foundation, 1986

National Science Foundation, Profiles -- Chemistry: Human Resources and Funding, Washington, D.C.: U.S. Government Printing Office, 1987 (NSF 87-307)

National Science Foundation, The Science and Engineering Pipeline, PRA Report 87-2, Washington, D.C. April 1987b

Shamia, Abdalla Imhemed, Forecasting the Ph.D Labor Market: Econometric Analysis, Ph.D. Dissertation, University of Washington, 1984

Snyder, Joan, "Early Career Achievements of National Science Foundation Graduate Fellows, 1967-76", Washington, D.C.: Office of Scientific and Engineering Personnel, National Research Council, 1988 (unpublished technical paper)

Syverson, Peter D., "Engineering Undergraduate Enrollment and the Engineering Labor Market: A Lagged Supply Analysis", (master's thesis) Virginia Polytechnic Institute and State University, May 1988

U.S. Congress, Office of Technology Assessment, Educating Scientists and Engineers: Grade School to Grad School, OTA-SET-377 (Washington, D.C.: U.S. Government Printing Office) June 1988a

U.S. Congress, Office of Technology Assessment, New Developments in Biotechnology: U.S. Investments in Biotechnology -- Special Report, Washington, D.C.: U.S. Government Printing Office, July 1988b (OTA-BA-360)

U.S. Congress, Office of Technology Assessment, Elementary and Secondary Education for Science and Engineering -- A Technical Memorandum, Washington, D.C.: U.S. Government Printing Office, December 1988c (OTA-TM-SET-41)

U.S. Office of Personnel Management, Office of Pay and Performance, Memorandum on "Adjustment of Special Minimum Rates and Rate Ranges Established Under 5 U.S.C. 5303, Jan 6, 1989.

U.S. Department of Energy, Energy Research Advisory Board, Science and Engineering Education, Washington, D.C.: U.S. Department of Energy, July 1988

U.S. Department of Labor, Bureau of Labor Statistics, Projections 2000, March 1988, (Bulletin 2302)

Wall Street Journal, "Research Spending in U.S. to Slow in 1989", December 21, 1988, p. B3.

4. EMPOWERING SCHOOLS AND TEACHERS: A NEW LINK TO JOBS FOR THE NON-COLLEGE BOUND

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FINAL REPORT

4. EMPOWERING SCHOOLS AND TEACHERS: A NEW LINK TO JOBS FOR THE NON-COLLEGE BOUND

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Demographic changes already at work are making American workforce problems more serious. The problems are well documented. First, many work-bound youths have poor work habits and poor basic skills in reading, writing,and mathematics (NCEE,1983; CED, 1985;NAEP,1985). Second, many work-bound youths, especially minorities and females, spend their first years after school unemployed or job hopping, with consequent loss of training and productivity.

Two demographic changes are making these problems more serious. First, minorities and females, groups that have had the most difficulties becoming integrated in the labor force, are becoming an increasing portion of the labor force (Johnston et al., 1987).

Second, the youth labor force is shrinking while demand is projected to increase. From 1979 to 1995, the 18-24 year old population in the US will decline by more than 25% (Berlin and Sum, 1988). In contrast, the most common view of our economy projects a strong gain in jobs over this period. Much of this gain will come in jobs requiring higher skills, while there will be little gain in jobs for people who cannot read and use mathematics (Johnston et al., 1987). "Unless workforce basic skills are raised substantially, and quickly, we shall have more joblessness among the least skilled, accompanied by a chronic shortage of workers with advanced skills."(Howe, et al., 1988).

These changes present serious challenges and opportunities to American society. The projected labor shortage means that jobs will be available for all work-bound youths who have basic academic skills, if our schools can educate them to that level. More disturbing features to this shortage are anticipated by some business and labor groups who foresee potential "labor market disruptions" for some sectors of the economy.

These changes are particularly alarming because our society is so ill-prepared to deal with them. We have become comfortable with squandering large portions of the youth labor force. For the past decade, a labor surplus made it easy to underutilize many new high school graduates, letting them endure long periods of unemployment and aimless job turnover. While these practices led to some expenses for the welfare system, they created minimal difficulties for the economy. The projected labor shortage suggests that we can no longer afford to squander young workers.

Some argue that free markets can adapt to these changing needs as they arise. As labor shortages occur, wage rates will rise, providing increased incentives for youths to educate themselves for the available jobs. However, this is not an instantaneous process. Young people cannot remedy six years of educational deficiencies in a year or two. We can reduce the future disruptions to the economy by anticipating future needs and by providing clear incentives now for youths to get the education they will need in the economy of the 1990's.

While other reports have addressed these issues, this report is distinctive in two respects. First, rather than focussing on academic problems, we focus on motivation problems, which are important in themselves and which affect academic problems. Second, rather than focussing on improving schools, we focus on improving labor market practices, particularly employer practices. While we believe schools must be improved, schools cannot do it alone. Schools need employers' help. In particular, employers must give schools the authority to control incentives valued by youths. The growing awareness of the developing labor shortage encourages us to believe that employers and schools will be receptive to the proposed reforms.

Achievement cannot be improved without student incentives and teacher authority.

Numerous reports have identified the poor academic skills of American youths (NCEE,1983; NAS,1984; CED, 1985;NAEP,1985). While poor academic skills are important problems, the reports may have focussed too narrowly on symptoms, not causes. The reports have called for longer school days, longer school years, and increased standards for teachers' qualifications, for curricula, and for graduation. While these reforms may be desirable, they ignore other critical influences on basic skills: students' motivation, efforts, and discipline.

Like pushing on string, increased hours and demands will be ineffective if students continue to ignore teachers' assignments. Reforms that compel students to spend more hours in school still cannot compel them to exert effort. Indeed, some researchers have suggested that increased hours and demands will only increase the number of school drop-outs (McPartland and McDill, 1977).

Motivation and discipline are important problems in schools. In every Gallup poll over the past 19 years, parents have identified disipline as one of the top two problems facing the public schools, with drug use the other leading problem in recent years (Gallup 1988). More intensive studies reach similar conclusions: Lack of student interest, student misbehavior, and drug and alcohol use are the three greatest high school problems. This is a finding of Goodlad's (1984) survey of 13 high schools. There is broad agreement on this by all parties. In Goodlad's survey of 664 teachers, 4212 parents, and 7677 students, all three groups rate these as the most important problems in high schools. Many other problems were also noted, but they were ranked as less important. Among the 14 items that were ranked lower were class size,inadequate resources, standards,poor teachers, administration, curriculum, and rules. To judge from these views, the panel reports' recommendations on hours, teachers, and curricula have ignored the most important problems.

Students' poor motivation is manifest in a variety of ways. Absenteeism, the most pervasive problem, has increased greatly since the 1960's (Meyer et al 1971) and is a nationwide problem (Birman and Natriello 1978). Class cutting, being in the school but not in classrooms, is the next most common problem, and it often is associated with other problems like fights and drug use. Other common discipline problems include tardiness, disruptive behavior, verbal abuse, failure to do homework assignments, and drug or alcohol abuse(Hollingsworth et al. 1984; Cusick 1983; DiPrete etal 1981; Chobot and Garibaldi 1982; DeLeonibus 1978; Thompson and Stanard 1975).

An inventory of problems does not capture their full implications for classroom processes. The acts of a few students affect a whole class. Even if only a few students are absent in a day, different students are absent on different days,so "continuity in instruction is seriously impeded, as teachers either have to backtrack to help the previous day's absentees catch up or have to abandon substantive content entirely"(Sedlak,1986, p.84). Moreover, "many students who attend classes sit passively at their desks, stubbornly refusing to finish homework assignments.. preferring instead to attend to other relatively unobtrusive non-school matters: personal grooming, card playing, ...[and] gossiping"(Ibid, p. 83). Student disinterest not only interferes with the individual's own learning, it also interferes with the entire class as teachers adjust to keep most students following.

The multiplicative effects of discipline problems are most evident with regard to violence. Although violence is a relatively infrequent problem(Gottfredson and Gottfredson,1985), it can have large effects. In the 1987-88 school year, 411 teachers in New York City schools experienced an injury requiring medical attention. Although a small proportion of teachers are directly affected, many others may avoid confronting students or may even stay home when they perceive a risk. Their responses, in turn, will affect many students.

Can student motivation be changed by policy efforts? Although some portion of motivation is probably engrained in personality and not easily changed, we are most concerned about the way motivation is manifest in behavior--as exhibited by student effort and discipline--and these behaviors are influenced by incentives and teacher authority.

Teacher authority is an important influence on students' school behaviors. Student effort and discipline do not occur in isolation; they occur in interactions between students and teachers. When a teacher makes an assignment, students' responses are a direct reaction to the teacher's authority.

In US high schools, teacher authority has been weakened by changes in values, legal rulings, and supports from external sources. Some indications of the weakening of teacher authority can be seen in the punishments that teachers can employ. Teachers used to expell students at their discretion, but legal protections of students' rights over the past two decades have been interpreted by teachers and principals to make expulsion very difficult (Gottfredson and Gottfredson,1985).[1] Teachers can keep students from being promoted, but even this sanction is rare due to social promotion practices. Teachers can prevent students from graduating, but one-time, all-or-nothing sanctions are difficult to implement, especially when so much is at stake. In actual practice, teachers rarely use these sanctions.

Grades are the main direct sanction that teachers control. The fact that student motivation and discipline are such great problems suggests that grades give teachers very little authority. We shall examine the reasons shortly.

This report contends that the main policy remedies for improving the quality of the youth workforce are increased student incentives and teacher authority. As we shall show, many motivation problems arise because schools, employers, and the school-work transition undermine teacher authority and the incentives that work-bound students value.Student behavior, and quite possibly, student motivation as well, are influenced by the incentives of the labor market.

The labor shortage of the 1990's not only provides special urgency to making the proposed reforms, but it also makes them have particularly great influence. Many low-income and minority youths acquired fatalistic attitudes because they had little chance to get good jobs during the labor surplus of past decades. In that time, they didn't just need basic skills; they had to do better than middle-income youths, who had early advantages, social contacts, and social prejudices going for them. However, the labor shortage of the next two decades creates new opportunities for these youths. Rather than being a zero-sum competition for too few jobs, the labor market will be the reverse--a competition for too few workers. In this situation, students' rankings will be less important than their achievements. Low-income youths won't have to surpass middle-income youths to get skilled jobs; they will get these jobs if they have the requisite skills.

The above considerations lead to a very optimistic conclusion. Low-income and minority youths must be given a new message: "There is a new game now, and the new rules help you!" Low-income and minority youths don't have to improve their relative rank; they only have to gain the requisite skills. But they must get the word that their opportunities have improved before they will work in school. These new opportunities may help youths to unlearn fatalistic attitudes.

In sum, students will not respond to increased standards if they don't see any incentives to do so. But the new labor shortage provides an opportunity to offer students strong incentives that can motivate their efforts, and if these incentives are controlled by teachers, then teachers will have enhanced authority to raise standards and improve achievement. The following sections outline how schools, work, and the school-work transition affect student incentives and teacher authority.

Four Factors Affecting Student Incentives and Teacher Authority

Having attributed youth problems to a lack of incentives and a lack of teacher authority, the following sections consider how student incentives and teacher authority are affected by practices in schools, work, and the transition between them.

1. Schools undermine student incentives and teachers' authority for many non-college students.

School is the first place we'd look for the breakdown of student incentives and teacher authority, since that is where it happens. Several school practices contribute to this breakdown.

First, schools focus their efforts and resources on college-bound students, so non-college students may feel neglected. High schools originally prepared students for college. Although their mission has broadened over the twentieth century(Trow,1961), the stress on college preparation is still evident in many school practices. High schools devote more resources to college preparatory classes. These classes get better teachers, new textbooks, better science laboratories, and more special programs(Rosenbaum 1978, 1980; Oakes, 1986).[2] Teachers and guidance counselors may even allocate more of their time to helping these students(Heyns, 1974).

Second, general tracks promise very little to students. While college tracks and vocational tracks promise preparation for specific goals, the general track has no clear goals and does not make any specific promises to students about the benefits of their education (Rosenbaum, 1976). Perhaps as a result, the general track tends to have more than it share of effort and discipline problems. Combs and Cooley(1968) found that nearly three-quarters of high school dropouts were in the general curriculum at the time they left school. Kelly(1974) found that, even after controlling for sex and social class, noncollege track students are more likely to report drinking alcohol, smoking cigarettes,skipping school, stealing, vandalizing, and gang fighting(see also Rosenbaum 1980; Stinchcombe, 1965; Polk and Schafer, 1972, Oakes, 1985).

Third, vocational tracks, which offer clear goals, often deliver less than promised. The evidence on the benefits of vocational tracks is mixed. Some studies find no difference between vocational and general track graduates in job level, salaries, or work performance (Kaufman and Schaefer, 1967; Garbin,1970; Grasso,1972; Oakes, 1985:152). Other studies find that vocational programs give some advantage in obtaining a high-status job and in raising wages if the job is related to one's training (Hotchkiss and Dorsten,1987; Meyer, 1982). Given scholars' confusion, students may also be confused about the benefits of vocational education. Moreover, there is great variability in the quality and effectiveness of programs both across and within schools.

Fourth, many work-bound students are involuntary captives to credential requirements. Schools offer these students one reward--a diploma. A diploma is often the only reason non-college students remain in school. Over 85% of American youths obtain diplomas, and the diploma has become a prerequisite for a decent job and even for many low-skill jobs. However, although students see a clear need for a diploma, they do not see any reason to learn what is taught in school.

This combination of incentives persuades many unmotivated students to stay in school to obtain the diploma, but it doesn't persuade them to work hard or be involved. As a work-bound student reported, "I'm just here to get the diploma, waiting until they give me the diploma" (Rosenbaum 1976). A teacher reported a similar view, "These kids don't want to learn. You can't teach them anything. They are just sitting in these seats until they get their working paper--a diploma." In the minds of students and teachers, school attendance has a legitimate purpose, but schoolwork does not. As a result, students don't work in school, and teachers know they can't make them work (Sedlak, et al.,1986).

2. The school-work transition undermines student incentives and teacher authority.

In the US, the transition from high school to work is unclear and difficult. Youths have difficulty seeing a route into good jobs or seeing how school can help them. Since clarity and difficulty are relative terms, we can see them more clearly by comparison with another country.

We take American practices for granted, but their shortcomings are evident when compared with Japan. In the "High School and Beyond" surveys in Japan and the US, youth were asked how they search for jobs(NSK 1984;NCES 1983). While over 75% of Japanese high-school seniors used schools' job placement activities to find jobs, fewer than 10% of US seniors used their school's placement services(Kariya and Rosenbaum 1988). The low counselor-student ratio (1:450) and the stress on college placement in the US are partial reasons (Dunham 1980). Perhaps the major reason is that American high schools rarely have contacts with employers (while they have regular contacts with college recruiters). In contrast, Japanese high schools receive notices of future job vacancies, and employers ask schools to nominate students for these jobs.

Of high-school graduates not attending college, virtually all Japanese students (99.5%) start working right after graduation (Ministry of Labor, 1982). In contrast, only half(49.4%) of American noncollege graduates have actually obtained jobs by graduation, and many won't have a job until three or six months later (Nolfi, 1978: 53). Even then, an American high school graduate's first few jobs may only be dead-end jobs, which offer low pay, little training, and no advancement opportunity. It should not be surprising that students might question whether school will help their job chances.

Of course, it is possible that youths delay work entry to find more appropriate jobs for themselves. However, even after they find a job, American youths have a higher turnover rate than Japanese when they first leave school (under age 20) and in later years(age 20-24), during rapid and slow economic growth periods (Rosenbaum and Kariya, 1988). Moreover, of high school graduates who changed jobs within two years after graduation, 15% of American youths were fired or laid off (NCES 1982), while only 3.2% of their Japanese counterparts were (Nihon Seishounen Kenyuujo [NSK] 1984). This is particularly important, since being fired or laid off has adverse implications for a youth's job history.

For American youths who get jobs right after graduation, most (58.3%) of those jobs are only continuing the part-time jobs they had in high school (Nolfi 1978,p. 53). These students, and others who view their experiences, must have serious doubts about the value of the high school diploma when it only permits youths to continue jobs they were already doing.

Studies suggest that school counselors often do not tell students about available jobs, how to search for them, how to evaluate them, or how to impress employers(Rosenbaum 1976;Dunham, 1980). Counselors provide few contacts to employers, and they rarely know what jobs youths get, or even whether they got one. Schools are not responsible for these matters.

In contrast with schools' extensive help to college applicants, schools give little help to job applicants. As a result, while few college-bound youths have much difficulty finding a college and staying at the same college, work-bound youths face a long period of job search, job hopping, and involuntary job turnover, unless they settle for the part-time jobs they already had.

Schools are not solely at fault. Employers often do not tell schools about job openings, ask schools' evaluations of students, or hire until youths have left the school.

3.Employers' hiring practices undermine student incentives and teacher authority.

Like their parents, American youths are very pragmatic. If they believe that school achievement affects their future careers, they will work in school. Elementary school teachers tell students that good grades will help their future careers, and this message bolsters teacher authority and gives students an incentive to work in school. Junior and senior high school teachers continue this message, but it begins to lose its effectiveness for some students. Although college-bound students continue believing it, work-bound students are less swayed by grades as incentives. They act as if they don't think grades have a payoff. Are work-bound students irrational to ignore this incentive?

Economic theory supports teachers' statements: it assumes that employers give better jobs and higher pay to youths with better grades, because they will be more productive. National panels (NCEE 1983;CED 1985) also support this view. They indicate that employers want applicants to have greater basic skills in reading, writing and math.

However, research indicates that work-bound students are right to be skeptical. Employers do not respond to the selection criteria that theory, national panels, and teachers expect them to value. Grades and test scores have little effect on which youths get jobs, better jobs, or better wages. Using national survey data (NLS72), Griffin et al.(1981) found that aptitude, class rank, and other school information have small and often insignificant effects on unemployment and job attainments of high school graduates who directly enter the workforce. They conclude that "none of the variables included in these equations...has substantial impact on positioning persons in either the primary or secondary sector or even on employment/ unemployment" (p.212).

Using the same data, Meyer and Wise(1982,p.312) found that class rank in school had insignificant effects on wage rates two years after graduation(1974) and only barely significant effects four years after graduation(1976). Willis and Rosen (1979) found that a one standard deviation increase in math and reading scores of high school graduates lowered the first job's wage by 3.5%. Bishop(1987) found that although basic achievement raises productivity, it has relatively small effects on youths' wages. In analyses of seniors in the "High School and Beyond" survey, grades have large effects on youths' getting white-collar and skilled jobs in Japan, but grades have small effects in the US (Kariya and Rosenbaum 1988). The small effects of grades on early jobs in the US have been extensively documented.

Why don't grades and test scores influence hiring decisions? Bishop(1989) believes schools are responsible. He notes the case of Nationwide Insurance Company which sent applicant-signed transcript requests to 1200 high schools and received only 93 responses. While this example is important, it isn't clear that schools are totally at fault. Employers tend to be well represented on school boards, and schools usually respond when employers are unhappy with a specific aspect of schools. If many employers wanted transcripts, schools would probably respond to these requests. We must wonder how many employers care about getting transcripts.

Studies of employers' attitudes and practices suggest another explanation for why grades and test scores don't influence hiring decisions. Some researchers have asked employers about their hiring practices. In a national survey of 1900 personnel officers, Crain (1984) found that they did not consider grades important for hiring high school graduates. A strong personal impression in an interview and a recommendation from a manager were rated "very important" by 76% and 56% of personnel officers, while grades and tests were so rated by only 18% and 12%. Diamond's (1970) survey of employers in ten major entry or near-entry occupations in New York and St. Louis also found that less than half used tests even for the most demanding jobs, and the main hiring criteria for these jobs was impressions in an interview. David Bills found that none of the employers he interviewed were concerned with grades (personal communication, May 27,1988). Employers rarely obtained school transcripts, and some employers didn't even request them. One employer actually refused to consider applicants with high grades because of a belief that these individuals would lack social skills. Even when school experience was considered, it wasn't necessarily academic. A bank personnel officer reported that he sought people with social skills, so that extracurricular activities were more important than grades. Crain and Bills both found that employers care about grades more for college graduates than for high school graduates.

In informal discussions, employers have told me that course titles, abbreviations and grades on school transcripts are hard to interpret or compare across schools. Many researchers, including myself, have had similar reactions. The difficulty of interpreting and comparing transcripts must deter many employers from using them. Employers also report that they think grades are irrelevant to their jobs and school tasks are irrelevant to their work tasks. Many employers have done better at work than at school, so their experience tells them that school grades don't predict work success. Although these are good reasons to ignore grades, they conflict with employer complaints about youth's work habits and reading,writing and math skills. Perhaps different employers hold these different beliefs,or perhaps some employers hold both ideas simultaneously: employers' criticisms of grades may come from their own work-entry experiences, while their complaints about youths' academic skills are a recent concern, arising from the greater skill demands of jobs and the changing composition of the youth labor market in the past decade. In any case, employers need to reconsider their reasons to ignore grades, and they need to reconcile their conflicting beliefs.

Although employers' concerns about poor basic skills imply that they would use high school grades for hiring, they do not do so. Bills' research indicates some possible reasons. We need more research on employers' complaints about school evaluations. Perhaps schools should ask employers how grades and transcripts could be more useful. In any case, employers' disregard of youths' school achievement indicates a profound breakdown of signalling capacity.The information that is potentially the best indication of youths' reading, writing, and math skills is not being used.

Apparently, students are not mistaken to scoff at grades. Grades don't affect the early jobs of high school graduates, and employers report that they don't use grades. While college-bound students have clear incentives to work in school, work-bound students do not.

A second employer practice also undermines school incentives. Many employers don't hire new high school graduates into the primary labor market (jobs offering training, advancements, job security, and better wages) because they think recent graduates are too young and too unreliable. "Well established firms with a sizeable investment in plant and equipment... prefer to hire men twenty five to thirty years of age, who are married and ready to settle down, after they have so to speak, sowed their industrial wild oats in other plants(Lester,1954,p. 53). Other studies also find that younger workers are hired by smaller firms, construction firms, and firms hiring many clerical workers, while older workers are preferred by manufacturing firms with skilled blue-collar jobs (Malm,1954; Hill and Nixon,1984). Similarly, a study of 35 Massachusetts firms found that primary labor market firms, those which provide the best-paid, most desirable jobs, "generally prefer not to hire young men just out of high school"(Osterman 1980,p.26). These preferences are sometimes company policies. I have seen several Fortune 100 corporations which have policies against hiring applicants under age 25 for full-time jobs. (Ironically, some have representatives on panels concerned about youths' poor academic skills.) Hamilton (1987) reports similar practices.

Youth avoidance practices may arise because employers want to hire employees who are likely to stay in the firm, and age is seen as an indicator of stability. The avoidance of young employees is due not to a lack of skills, which employers feel they can provide, but to employers' inferences about youths' propensity to stay with the firm (Osterman,1980). "The reluctance of primary firms to hire young workers forces youth into the secondary sector... Thus it is the hiring pattern of primary firms that is the central structural characteristic of the youth labor market rather than, as is frequently argued in the popular literature, the youngsters' lack of entry level skills"(Ibid.,p.27).

As signalling theory tells us, the choice of hiring criteria is an economic issue: employers choose easily obtained criteria which help them get better employees. Age is easily obtained and may be a modest (but not strong) predictor of the propensity to stay at a job, so it would seem to be an economically useful signal. However, its use prevents employers from distinguishing among youth and identifying which youth are more stable and productive. We have argued that school records may contain better signals: grades, effort, and attendance.

Moreover, firms' avoidance of youth may have additional costs. If recent graduates can only anticipate unskilled jobs that don't use basic skills or offer advancements, then high school students won't have incentives to learn basic skills or work habits. This may undermine the basic skills and work habits of all youth, including those whom employers will hire seven years after graduation.

Employers' strategy has a short-term logic: recent graduates may have worse basic skills and work habits than 25-year olds. However, employers have more to gain by taking a long-term view: if they hired recent graduates with better grades, students would have incentives to work in school, recent graduates would have better skills and work habits than they now do, and so would 25-year olds. While employers can get more mature workers by hiring 25 year olds, they cannot avoid getting the products of this poor incentive system.

In addition, by waiting until applicants reach age 25, employers will have more difficulty assessing basic skills. This may explain why grades (earned 7 years earlier) don't affect hiring for better jobs, since this information is pretty old by the time employers hire 25 year olds.

By ignoring grades and not hiring new graduates into primary labor market jobs, employers undermine students' incentives to work in school and deprive teachers of authority. We turn, then, to see how teachers cope with their diminished authority.

4. Lacking authority, teachers make "bad bargains" with youths.

School policies, guidance practices, unclear paths to work, and employer hiring practices all deprive teachers of authority over work-bound youths. With their sources of authority undermined, teachers still must come to terms with youths who unwillingly attend school to get a diploma but who have no incentive to work or behave in school. How do teachers respond to this situation?

Like lion-tamers without a whip, teachers reduce their demands on their charges. As long as they are in the same classroom, they have to reach an accommodation, and with limited bargaining power, teachers compromise their expectations. Tracing the history of this condition and reviewing modern studies of classrooms, Sedlak et al (1986) develop a strong case for seeing the declining standards in American schools as arising from such "bad bargains."

> During the twentieth century, adolescents have progressively disengaged themselves from their high school's academic experience..Traditional incentives which once kept at least a large percentage of the high school student body modestly involved in academic work have eroded for both ideological and economic reasons.The collapse of

these incentives has left many classrooms filled with indifferent and disaffiliated students.(Sedlak, et al, 1986:13)

American high schools have dramatically lowered standards for graduation, and the high school credential is no longer a meaningful signal of academic achievement. Students have learned that they can get a diploma without working in school, so they see little incentive to work in school unless they have college plans. Teachers still have the power to flunk students and to prevent them from graduating, but teachers are reluctant to hold back the diploma for poor work in one class, so failure is often not a credible threat. As a senior in a working class school told me, "as long as I don't cause too many hassles for teachers,they will let me get by and graduate"(Rosenbaum,1976).

Sedlak et al(1986, p.5) argue that teachers have made a bargain where they demand little of students if students will demand little from them: "In most high schools there exists a complex, tacit conspiracy to avoid sustained, rigorous, demanding, basic inquiry." This informal bargain evolves from the interaction between teachers and students, and this bargain has increasingly reduced educational standards over the course of the twentieth century.

This bargain mostly affects work-bound students. College curricula may have experienced a small dilution of standards, but college admissions places an important constraint on standards for college-bound students. Presumably, employers could provide a similar constraint in limiting the declining standards for work-bound students if they wished. Teachers and students can reach a bargain for lowering standards for work-bound students because employers have no impact on standards or do not care about standards. However, if employers were linked with schools as colleges are, and if employers had hiring standards, then they could have similar influence.

The bargain arises from teachers' lack of authority. Teachers are desperate. They are locked into the school with students, many of whom are unwilling inmates-- captives to a job market which requires a diploma, but not the accompanying skills. Students' only incentive is a diploma, a reward that is too valuable for teachers to withhold for poor work in one course. Teachers don't want to prevent a student from graduating just because they didn't pass a course. Teachers are further constrained by the dictates of state subsidy requirements, which make a substantial portion of the school's finances tied to student attendance. Having their only sanction, grades, disvalued by employers, teachers feel constrained to make bad bargains.

Schools are not solely to blame for the decline in standards. By ignoring grades, employers undermine schools' authority to pose standards. While colleges authorize schools to evaluate students and provide incentives for schools to devote resources(their best laboratories, books, and teachers) to college-bound students, employers let schools ignore work-bound students and offer low standards and few resources to these students. If employers contacted schools, valued their evaluations of students, and rewarded accomplished students, schools would respond differently.

Alternative Models: Japan,Germany,Boston

In many respects, the US labor market operates like a pure market. This has some advantages, but it can also have serious disadvantages. Markets sometimes lack ways to convey information. For instance, in the youth labor market, employers often lack good information about applicants, and youths lack good information about the basic skills they need to do well in jobs. We are used to our labor market practices, and we take its outcomes for granted. However, other practices are possible, and these alternatives have quite different outcomes.

Having reviewed some causes of youths' problems, we now review some different models of school-work linkages where these problems are much attenuated. The essential features of all three models are that work-bound youths have incentives to learn and teachers are empowered to affect important outcomes for youths.

The Japanese System

Japan has a very different youth labor market. It violates much that we assume about markets, but it has much better outcomes than our youth labor market. In Japan, many firms have long-term arrangements in which they authorize high schools to nominate students to fill their job openings. Schools are expected to nominate students with better grades for better jobs. The link between grades and jobs extends down the scale, so even students with poor grades can get a better job by improving their grades. The quota of jobs that a high school can fill in this way depends on the school's reputation and the company's experiences with the school's previous graduates. Schools know they must stick to these criteria: If they don't, they won't get jobs from that firm in the future. If schools stick to these criteria, employers give schools authority to affect student careers.

Japan's system is highly structured. Institutional arrangements limit the operation of the labor market. But Japan's system has several advantages: schools--which have extensive information about students and jobs--make first selections. As a result, employers get better achieving students for their more demanding jobs, and students know how the system works and they see clear incentives to work in school(cf. Rosenbaum and Kariya, 1988).

The West German System

The West German system is one of the most effective in Europe. It "offers a comprehensive list of services, organizes the transition from the national government down, [supervises schools' efforts] to initiate and carry out activities without outside supervision, uses bridging agencies that strongly involve the labor market authorities, and integrates youth services with those for adults" (Reubens,1976). It provides clear incentives for students, since students with better grades get into better vocational schools, get apprenticeships in better occupations, and ultimately get better jobs.

It also provides clear linkages to work. German schools provide clear vocational preparation; 88% of work-bound students receive a recognized vocational qualification and few fall between the cracks (Osterman, 1988, p.114). Moreover, in contrast with the uncertain preparation of the general and vocational tracks in the US, employers trust vocational graduates to have a dependably high level of skill, and youths' first jobs tend to be related to their preparation. The German Federal Employment Office also enhances the linkage by providing vocational services to schools, and providing individual counselling to those leaving school, of whom 60-80% participate(Arnow, et al,1968, p.142). Employers also contribute to the linkage. "Employers have social obligations to fulfill by training apprentices" and the federal government can levy a payroll tax if a firm fails to provide its share of apprenticeships (Hamilton, 1987, p.322). The German apprentice system enables youths "to move directly into primary-labor-market careers at a time when their counterparts in the US...begin a period of low-skill and low-paid work" (Hamilton,1987, p.314).

The Boston Compact

In 1982, Boston businesses, trade unions, and colleges signed agreements with the Boston Public Schools to increase youth employment and access to college, while the schools promised to improve student achievement, attendance, and graduation rates(Farrar and Cipollone, 1988).

Despite its many successes, the Boston Compact falls short of the standards suggested by our analysis. First, although schools have incentives to improve average achievement, the program doesn't offer incentives to students. Second, it does not increase teachers' authority. Third, it does not stipulate the quality of jobs to be offered or how they are related to individuals' performance.

Yet these issues are addressed by some schools and some employers in the Boston Compact. In interviews conducted especially for this report, I learned that some schools have incorporated the kinds of individual student incentives suggested by our analysis. In telephone interviews(December 15-22 1988), staff members at the Boston Compact and PIC (Private Industry Council) offices gave me further details about the way the Compact works.

They indicated that some schools have used jobs as incentives for work-bound students. Like Japanese high schools, each Boston high school has a few highly prized jobs reserved for its graduates. White-collar jobs with large banks, insurance companies, or computer firms are most desired because they offer better pay, better training and advancement, and more job security. For example,for Hyde Park high school, Bank of Boston was one of the most desired employers. For English high school, John Hancock Life Insurance Co. offers some of the best paying jobs.

Also like Japan, some career specialists reserve the best jobs for students with the best school records. Grades, teacher evaluations, and attendance were used to determine who was nominated for the best jobs. Unlike Japan, career specialists do not enforce rigid grade standards for jobs.

A PIC official reported a story of two boys who did well in their summer jobs at a large bank after their sophomore year. However, in their junior year,one did well in school while the other did poorly, letting his attendance and grades decline. Even though the bank wanted to hire both again the following summer, the school counselor refused to let the latter student return to the bank, offering him a less desirable manual job. According to the report, this student worked much harder in his senior year, and ultimately got a good job after graduation. Although I have no evidence about how often this kind of selection occurs, the story conveys an important lesson to students.

The "Earn and Learn Program" in Brighton(a region in Boston) is another example where school performance affects jobs and pay. Extensive efforts by the Brighton Board of Trade have enlisted particularly great cooperation by firms, including lower foremen and supervisors. This program allows students' school grades to affect their jobs and their pay raises in their parttime and summer jobs. The PIC official indicated that while company presidents are sometimes willing to give schools authority and make grades count, foremen and supervisors--who have to supervise these young workers -- are sometimes obstacles to school partnerships. The Brighton program succeeded in enlisting the cooperation of this group.

The fact that the career specialists are selected by the PIC office may give them a better feel for how to select youth for employers. Unlike school counselors who may be less familiar with local employers than with local colleges, PIC representatives may have a good idea of the kinds of employees required by particular jobs and particular employers. In any case, the fact that career specialists were selected by PIC may give them greater credibility to employers. Of course, this may also weaken their relationship to teachers.

We must caution that the above efforts may not apply in other Boston schools, and we don't know how effectively they've been implemented nor how many students have been affected. We note them because they seem to be efforts to extend the Boston Compact in the direction we've suggested--to make incentives for individual students. Their effects require more detailed studies.

In terms of the overall success of the program, the Boston Compact has not lived up to all of its goals. Although employers did their part in offering jobs, the schools have not succeeded in raising student achievement,attendance, and graduation rates(Farrar and Cipollone 1988). Some conclude that the program is a failure. However, it is possible that the Boston Compact did not go far enough to implement its ideals.The Boston Compact created incentives for employers and for schools, but it did not create incentives for individual students.

Nor did the Compact bring teachers into the process in a systematic way. In Japan, grade-based job selections give teachers considerable authority over students, and we suspect that the Boston Compact could increase teacher authority, too. A program which enhances teachers' authority may greatly reduce discipline problems, which are highly disruptive in American high schools (Sedlak et al 1986).

As noted, some career specialists in a few schools made some efforts toward basing jobs on school performance, but the program did not foster these incentives generally. A single career specialist acting alone in a school probably affects only a few juniors and seniors, and even fewer young students. Indeed, the Compact had little way to motivate elementary and junior high school students. By the time students became aware of the Compact in high school, they may have felt they were too far behind the schools' achievement standards to catch up.

Like the Japanese system which creates incentives all the way through the school system, the Boston system may have to show elementary and junior high school students, and all students in the high school, that grades matter. The Japanese system suggests that the Boston Compact may be a good effort in the right direction, but it may not have gone far enough in implementing its ideals.

Recommendations

Ironically, while employers blame schools for poor student achievement, employers control the most important incentives--jobs. Employers can motivate students and bolster teacher authority by hiring based on teacher ratings, by clarifying the relationship between basic skills and desirable jobs, and by making stronger ties to schools and clearer paths from school to work.

Schools also have a role. Some schools shortchange work-bound students by assuming they need less help than college-bound students. Schools can improve incentives for work-bound students by having strong ties with employer recruiters as they do with college recruiters, by providing information and counseling for work-bound students as they do for college-bound students, and by writing recommendations for work-bound students as they do for college-bound students. Schools can also improve student incentives and teacher authority by restructuring the general track and by making grades meaningful to employers and motivating to youths.

Employers, schools and youths must realize the great challenges and opportunties of the 1990's. Because of the coming labor shortage, we will need more youths and better educated youths. We cannot produce more 18 year olds by 1995(except by altering immigration policy), but we can stop wasting youth. Indeed, we must do so. We cannot afford to let work-bound students be poorly educated or spend long periods floundering before getting work. Employers and schools must begin taking actions now to help youths prepare for their new opportunities. Youths must be told that they have new opportunities for good jobs and that they have clear incentives to work in school. The youth shortage gives urgency to the following reforms.

1. Employers should hire youths based on grades, test scores, and school recommendations.

This can benefit employers in two ways. First, grades, achievement test scores, and teacher recommendations provide better information about basic skills than employers can get from brief interviews, which are the most common screening method. If employers care about basic skills, and many say they do, they should hire based on grades.

Second, employers can increase teachers' authority by empowering them to affect students' jobs. Just as admission to a better college is a strong incentive for college-bound students, a better job is a strong incentive for work-bound students. This is the most effective way to increase teachers' authority. If students see that teachers can influence their future jobs, they will be more motivated to work in school and to acquire basic skills.

2. Employers must show youths how basic skills lead to desirable jobs. Employers often claim that entry jobs, though not requiring basic skills, lead to desirable jobs that require these skills. Youths are skeptical. Students will see incentives to learn basic skills if employers show how entry jobs lead to desirable jobs which require basic skills.

Youth are often told that unskilled entry jobs offer training for advancement, even if labor markets don't make this explicit. The National Academy of Sciences report expresses these views.

> "A career is a series of jobs, each often involving new responsibilities, new knowledge, and new skills...First

> jobs often offer low pay and scant advancements–and may even discourage some new workers about their chances of finding better employment. But even jobs that do not offer opportunities for advancement provide the initial experience that every young worker needs; so, the quality of early jobs is less important to career prospects than that of later jobs."(National Academy of Sciences 1984, p. 14)

However, such views require much faith and patience from youth. To a new high school graduate --who still holds the same part-time job flipping hamburgers that he had before graduation--these words must seem vague and hypothetical. Similarly, to the youth's friends still in school, it may be difficult to see why they should get math and writing skills, if they only anticipate a job flipping hamburgers when they graduate.Youths cannot be expected to defer gratification and work hard in school in such circumstances. Vague inspirational generalizations about the experience offered by hamburger flipping require too much faith and patience from youth.

Employers must clarify the relationship between entry jobs and later jobs which use basic skills. Entry jobs don't reward basic skills, and jobs that reward these skills come so late that they are not salient to students and seem unrelated to entry jobs. Vague claims that entry jobs teach work skills that will help youth get better jobs are not enough to persuade skeptical youths. If employers believe their own claims, they could offer explicit job possibilities to help youths see a reason to get basic skills in school and a reason to work in their entry jobs. For instance, a hamburger chain could establish links with large firms to promise desirable skilled or clerical jobs to their best workers. Even better, employers could hire some new graduates into primary labor market jobs. Employers' efforts are crucial for helping students see a path from school to work that makes schoolwork relevant.

Youths need specific information about concrete job moves that people have followed after taking a particular entry job, and the probabilities of these job moves. Job advancement possibilities shouldn't be a matter of faith. Specific examples and timetables should be provided.

Employers' beliefs that 18 year olds are unreliable are a barrier to such reforms. However, their practices of hiring recent graduates into unchallenging entry jobs create a self-fulfilling prophesy.Until entry jobs offer youths incentives to stay in their jobs, youths are unlikely to do so.

If entry jobs were connected to career ladders, employers would be more likely to use grades for hiring into entry jobs, and students could see the relevance of schoolwork for their future careers. Such links may eventually happen anyway with the future labor shortage, but starting the linkage early would give youths incentives to work in school now. Indeed, since the youth labor shortage is likely to raise the wages of hamburger flippers in the 1990's, such career arrangements may even slow the rise in the wage costs of entry jobs.

3. Employers must tell school counselors about job openings and hiring criteria, trust counselors' recommendations, and make hiring selections while youths are still in school.

The unstructured labor market creates much youth unemployment and turnover which leads to temporary losses of time, and permanent losses of wages(Ellwood,1982;Evans,1987). In contrast, some European countries make schools responsible for helping youths find work and make some employers responsible for helping to place students(George 1987). In Japan, schools actually nominate students for jobs and help students get jobs before graduation.

Rather than pushing youths into the labor market to fend for themselves, employers and schools could collaborate in the hiring process. Employers could tell counselors about job openings and the kinds of youths they hire, they could trust counselors' recommendations, and they could make hiring selections while students are still in school, so counselors could help youths' choices and employers' selections. By trusting schools' selections, employers would find students who are more qualified for primary labor market jobs.

In turn, counselors could tell students about available jobs, put them in touch with employers, monitor what jobs they get, and provide help for students having difficulty. Counselors are responsible for monitoring and assisting the progress of college applicants, presumably because students would have difficulty on their own. Obviously, many work-bound students also have difficulty navigating the transition to work, and schools could assist them. If students were hired while they were still in school, schools could see which youths are having difficulty and could provide additional help. Work-bound youths should not have to choose between continuing their after-school jobs and long periods of job search, job hopping, and involuntary job turnover. As in many other countries, American schools could be responsible for helping youths find jobs, training, or apprenticeships and for helping those who are having difficulty.

High schools could go even further. Like Japanese schools, they could nominate students for job openings. Although this system seems more extreme, college recruiters in the US often reserve a certain number of openings for particular schools and ask school counselors to nominate students for those positions. Rather than employers assessing youths in a 1/2 hour interview, schools can draw upon their extensive experience with these youths to recommend students for particular jobs.

Although many reformers urge schools to provide better information about work, employers don't seem to have explicit hiring criteria(Diamond,1970), they are reluctant to make hiring decisions before graduation, and they have not conferred authority to schools to affect hiring decisions. Schools can only offer information and guidance if employers' hiring practices are clear and patterned in ways that can be explained. Moreover, schools cannot help students find jobs if employers don't hire students until after high school graduation.

4. School counselors will be more effective if they have strong ties to employers.

Counselors should know employers' concerns and be trusted by employers. Given employers' reluctance to trust schools' evaluations and counselors' poor knowledge about jobs and employers, school-employer linkages will be more effective if employers participate in selecting counselors.

A school-based employment service is a way of making school-employer partnerships more effective. This is an idea which has been implemented in Boston, where the local Private Industry Council (PIC) selected the career specialists who work in the schools to advise and place students in jobs. Having been selected by an organization on which employers are represented, this counselor has knowledge of employers' general needs and of diverse concerns of different types of employers, and this person is trusted by employers. Yet, by being based in schools, this counselor can encourage school achievement with the full authority conferred by employers. Moreover, by asking teachers' advice and using teachers' grades, this person gives teachers greater authority.This counselor can help to foster long-term relationships between schools and employers.

The current employment service knows too little about youths so it helps youths less than older employees, it tells employers very little about applicants' skills, and it has no effect on schools. A school-based employment service, with a single work counselor in each school, could provide much better information to students, teachers, and employers. These work counselors would have greater knowledge of students, which they could convey to employers. They would have greater knowledge about the particular needs of employers, which they could convey to students and teachers. These work counselors could not only convey better information in both directions, but could ultimately encourage youth to be come better trained.

5. After receiving clear information about employers' job openings and hiring criteria, school counselors can help employers hire suitable youths and help youths choose suitable jobs.

In a market system, information is critical. Markets provide incentives to acquire information, but not always the means. Counselors can be a conduit for information to employers about qualified youths and to youths about jobs and how to get them. The market model should not be an excuse for school inaction. Markets require schools' actions.

Employers rarely have good information about young job applicants, and youths rarely have good information about jobs. If employers tell counselors about their job openings and hiring criteria, counselors can assess students to help employers select youths and to help youths choose realistic plans. Counselors must also help minority and low-income youths to realize the increased availability of skilled jobs. Minority and low-income youths are especially dependent on schools since their parents often do not have experience in high school or in career-ladder jobs. Therefore, schools' failures to provide information are particularly harmful to these youths.

We stressed the need for schools to inform youths about the new labor market of the 1990s. The labor shortage will create new job opportunities for youths, and minority and low-income youths are unaccustomed to these opportunities. A natural lag is likely because youths will be skeptical of the new opportunities and because schooling takes time. Schools must take extra efforts to show youths that the rules are changing and that their opportunities are increasing. Moreover, employers could aid this effort by taking actions which show that the new rules have already begun. This may involve some sacrifices by employers, offering new job opportunities before they have to. However, these costs will be investments in motivating youths now in school.

Counselors must also cool-out "strike-it-rich" dreams. Counselors don't like to give bad news or to say that a student's dream is unlikely. The American stress on open opportunity takes the bite out of present achievement and selections, and counselors are reluctant to reach a verdict about a student's future from his performance. Counselors sometimes permit youths without college potential to aspire to jobs requiring BA degrees(Rosenbaum 1980). Counselors let youth pin their hopes on "jackpot" jobs, jobs with high risks and rewards, like basketball or rock&roll. Its fine to encourage kids to work hard for such jobs with high risk and reward, but youths should not sacrifice all back-up options. Youth should be told the odds of "jackpot" jobs, and the meager consolation prizes if they fail. They should know the poor odds of getting into pro-sports and their poor back-up options if they lack basic literacy skills. Long hours at the hoop are a good investment in a long-shot big prize, but some hours at the books are a good insurance policy.

Youths, especially minority and low-income youths, need more information about available jobs, job requirements, and career futures. Counselors must tell youths when their plans are totally unrealistic and help them make realistic plans and practical strategies to pursue those plans.

6. Schools must make grades meaningful to employers, especially recruiters and foremen.

To make their evaluations meaningful to employers, schools must overcome employers' mistrust of grades--which are more useful than employers usually realize--and modify grades to be more useful to employers. Employers are often skeptical of grades and don't use them for hiring or for setting entry wages. However, employees with better grades get higher pay after five years (Bishop,1989), presumably because they are more productive. If employers recognized this from the outset and hired youths with better grades, they would obtain more productive employees and would provide clear incentives to youths to get better education.

However, some modification of grading could make grades more useful to employers.Teachers should give two kinds of grades: grades for effort and grades for achievement. Currently, grades indicate both effort and achievement, so grades are difficult to interpret. Separate grades for effort and achievement would have several advantages for employers.

"Effort grades" would tell employers which applicants are hard-working. For many jobs, effort is an important job requirement, and "effort grades" would be useful information that employers could not assess in any other way. Moreover, separate "effort grades" and "achievement grades" would make each more valid. Currently, grades are supposed to reflect achievement, but teachers are often tempted to raise the grades of low-achieving students who work hard(Rosenbaum, 1976). Separate grades would reduce that temptation. As we note in the next section, "effort grades" would also be more motivating to some students.

Standardized achievement tests could also be used to make grades better signals of basic skills. By administering tests, schools would have a standard for their grade scale. Tests would also help employers compare applicants from different schools. Since most employers hire from one or a few local high schools, this would rarely be needed, but it would help large regional employers.

Even if tests were given, there are still reasons for employers to base hiring partly on grades. Grades sample performance over a longer period of time than tests. Grades also sample a broader range of performances than timed, multiple-choice tests, and they are less affected by test-anxiety. Grades also come closer to reflecting real world achievement, which occurs in social contexts and in social interactions with peers and supervisors(Resnick, 1988; Rogoff and Lave, 1984). Moreover, grades indicate students' achievement relative to teachers' demands, which is analogous to work situations where employees must satisfy supervisors' expectations.

Indeed, even the College Board, which creates and administers the SAT exams, tells colleges that students' high school records should influence college admissions more than SAT scores. SAT scores, the Board says, are "intended to supplement the secondary school record and other relevant information about the student in assessing competence for college work"(College Board, 1978). Crouse (1988) estimates that the SAT adds only a modest amount (typically .06-.08 in the multiple correlation) to the prediction of freshman grades over what the school record alone can predict. Surely the same cautions would apply even more strongly for predicting job performance, and grades and other school record information should be stressed over tests in hiring decisions.

In part, the confusion about what employers want comes from the fact that many kinds of employers(big and small firms, high and low skill jobs, etc.) have different views. Even members of the same firm may have different interests. The executives who serve on panels are concerned with academic skills, while foremen and recruiters may be concerned only with inexpensive and obedient labor(and they may even feel threatened by youths with strong academic skills). Since the latter actually hire new recruits, firms may be using different hiring criteria than executives intend. The success of the Brighton program in involving foremen suggests that recruiters and foremen are crucial to making hiring practices change.

7. To motivate youths, schools should rate students for "effort" and for "improved skills."

The current system of grading has difficulty motivating the bottom half of the class. Students with the lowest achievement and least motivation are least responsive to grades.

New kinds of grades would be better incentives for many students. In addition to grading students on their level of achievement, schools could also grade students on their effort or on raising their own achievement by some amount(McPartland and McDill 1977; Wagenaar, 1987, p.176). Attainable rewards which reflect students' efforts and competence encourage effort.

The circumstances in which grades are given can also influence the motivation of low-achieving students. Clear rules and consistent enforcement encourage academic achievement. Low-achieving students tend to work harder if schools strengthen their ties to students by creating smaller programs, by providing clear academic standards and consistent support for attaining these standards, by responding to student performance and behavior and giving them feelings of success, and by individuating curricular and instructional approaches to respond to the aptitudes and interests of at-risk students (Wagenaar,1987,p.180). Making courses more related to students' vocational objectives may encourage work-bound students to master basic skills by giving them a belief in the relevance of school for future jobs (Stern, et al., 1985).

8. Teachers should write references for work-bound students, as they do for the college-bound.

Giving teachers more authority is essential for raising standards. Students often get the impression that they can do an "end-run" around high school achievement, getting a good job without working in high school. American myths of "open opportunity" convey the illusion that youths can always have second chances for advancement without any penalty for poor previous performance. American culture encourages a belief in the "easy, clever" way to success, and television shows examples of this fantasy all the time. It sometimes happens, of course, but it's a longshot. As long as youths harbor this fantasy as a serious option, they will not see teachers as having any authority over them, they will not see high school records as counting, and they will not see any payoff for school effort .

Just as teacher recommendations help colleges select among applicants and provide incentives to college-bound students, teacher recommendations would help employers' selections and provide incentives to work-bound students. Teacher recommendations might involve brief descriptions of students and rating scales about traits of concern to employers, such as energy, enthusiasm, perseverence, interpersonal skills, peer relations, need for supervision, ability to learn new tasks, etc. This would provide useful information to employers and would tell work-bound youths that their school efforts count.

Many other nations give teachers this kind of authority. As noted, in Japan, a committee of teachers nominates students for jobs based primarily on grades, and these nominations largely determine students' jobs. In Germany, students with the best grades get preferred apprenticeships. In Canada and several European nations, national examinations, based on the school curriculum, have large influence on hiring(George, 1987;Bishop, 1989). Although the Boston Compact does not require it, some Boston schools have tied individual students' grades with the jobs they get. Such practices allow teachers to affect important student outcomes, and we suspect these practices enhance student motivation and achievement.

Teacher recommendations have the distinctive advantage of telling work-bound students that they will be evaluated as individuals, and their own combination of skills and accomplishments matter. They are not just being rated on academic grades, which repeatedly place them on the bottom tail of the curve. They aren't just serving their time in school to get a diploma. Teachers are helping them and will evaluate their strengths and weaknesses to help them find a suitable job.

Giving teachers authority over hiring will make employers,teachers,and parents uncomfortable. Employers have long been reluctant to use teacher ratings in hiring. However, since grades predict later employee productivity, and since employers complain about youths' achievement and motivation, employers may be persuaded to use teachers' ratings in hiring. Teachers may be uncomfortable about having this influence, but if it encourages student effort, reduces discipline problems, and allows them to avoid making "bad bargains" with students (Sedlak,et al., 1986), teachers may be willing to assume this responsibility. Parents of work-bound students may become more concerned about their students' grades, but this may be an improvement, if it motivates parents to monitor their children's progress and to encourage their children's efforts in school.

This incentive is not the whole solution,but it is an important move in the right direction. It won't happen right away. It may take 30 years, for it requires changing norms and practices in many schools, firms, and people. But any move in this direction is a worthwhile step that will help reverse the current lack of incentives for work-bound students. If it increases the quality of high school graduates, this reform may even encourage employers to offer career ladders to youths.

9. Schools must make grades and teacher recommendations available to employers and make transcripts easily understood and compared.

Schools do not always get students' transcripts to employers in a timely manner(Bishop 1989). We do not know why this happens. Is it because schools place a low priority on these transcripts, or because schools learned that employers don't use grades? Regardless of cause, these practices require change. Bishop(1989) has proposed an easy solution: portable transcripts. Students would be given their own transcripts, encased in plastic to prevent alterations. This would permit students to carry their transcripts on job interviews.

Even when employers receive transcripts, they cannot easily interpret them. The abbreviations and cryptic course descriptions are hard to understand. Grading scales and their distributions also differ. These problems seem to be worse for non-college bound than for college-bound students. Schools should try to make transcripts easier to understand, and professional organizations and the US Department of Education should work to develop a standard that is comparable across schools.

10. Schools must restructure general track to offer preparation for youths' future goals.

The general track offers little preparation for either college or jobs, and so it offers youths no incentives to work in school. This track must be redesigned to offer youths incentives to work in school and to bolster teacher authority.

Many criticisms of American high schools are really criticisms of the general track. It lacks clear purpose. It lacks academic rigor for college or vocational training for work. Some propose that the general track should incorporate better college preparation(Oakes, 1985). Others propose introducing vocational courses, co-op programs, or learning-at-work to aid students' motivation (CED, 1985;Hamilton, 1987; Bishop, 1988;Stern,et al.,1985). Regardless, the general track in its present form offers too little reason for students to work in school.

11.Affirmative action groups should encourage employers to use grades for hiring.

Policies to help minority youths get better jobs must not undermine the influence of grades, which are students' main incentive to work in school.

If grades are good predictors of performance, why don't employers use grades to select employees? Court decisions about discriminatory hiring criteria raise a possible obstacle to using grades (Bishop 1989). The courts have posed severe standards for assuring that tests are valid and not discriminatory(Griggs vs. Duke Power). However, while the Equal Employment Opportunity Commission(EEOC) has aggressively examined tests, they have shown less concern about grades. Perhaps EEOC considers grades less discriminatory than tests or more suitable as *bona fide* occupational requirements since they reflect long-term performance.

In any case, there are strong reasons for EEOC to allow grades to affect hiring decisions. Work-bound youths will see no incentive to work in school if grades don't affect hiring. Minority access to an entry job is a hollow victory if minority students get the idea that basic skills are unnecessary. Moreover, entry jobs are a meager reward if employees lack the basic skills to get promotions. EEOC has less influence over promotions, since employers can justify their promotion decisions with work-related performance ratings. Policies to help minority youths get better jobs must not undermine the main incentive for these youths to work in school.

12. What can the US Department of Labor and Department of Education do?

The Department of Labor and Department of Education can help publicize these problems and the ways they are being addressed in the US and other countries. The need for direction is evident. The above problems with the transition from high school to work are not even addressed by current reforms. Recent "school-work partnerships" focus on providing services to schools: providing tutors, staff developers, technical advisors, additional curriculum materials, or work-study jobs. According to one report, 60,000 partnerships have been tried(Howe et al., 1988), yet few link school achievement with important incentives, nor do they enhance teacher authority. While schools can always use additional resources, this analysis suggests that partnerships will be most effective if they focus on the central issues of providing student incentives and teacher authority. School-employer partnerships are a good vehicle for addressing these issues, so it is particularly disappointing that they have not done so.

Even the school-employer partnerships which address these issues are not being adequately described in the media. There is a great need to publicize the central issues and the most successful ways to address them. Otherwise, new partnerships will be ineffective and disappointing.

The Department of Labor and Department of Education should fund demonstration projects to encourage employers and schools to form linkages and to empower schools and teachers. While schools and employers can implement some features with little cost, linkages between schools and employers require additional funds. These funds may have to come from public sources, since linkages do not necessarily aid the short-term goals of either schools or employers.

In addition, the Department of Education should propose standards to make transcripts more understandable and comparable across schools. Currently, transcripts are so difficult to interpret and compare that they are virtually worthless for employers.

As we have noted, much time will be wasted if we wait for market mechanisms to react to these future problems. Meanwhile, we are at an impasse. Employers will not use grades until schools make grades available meaningful, understandable, and comparable; schools will not respond to employers' needs until those needs are more explicit; work-bound students will not exert effort until employers give them incentives and give teachers more authority. To get beyond this impasse, the federal government must initiate actions to make schools, employers, and students aware of how they can better advance their mutual goals.

Footnotes

1.This interpretation may not be legally correct, but as a practical matter the law has certainly made expulsion a great deal of trouble for teachers and principles. While student rights deserve protection, one result has been an erosion of teacher's authority. For over a decade, it was impossible to expell a student from New York City schools. Only in 1989 were the rules changed: a student with a gun in school can now be expelled.

2.Although some vocational programs get more resources than college track, many get outmoded equipment donated by local businesses.

References

Arnow, et al,1968. The Transition from School to Work. Princeton,NJ: Woodrow Wilson School.

Berlin, Gordon and Andrew Sum. 1988. Toward a More Perfect Union. New York:Ford Foundation

Bills, David 1986. "Educational Credentials and Hiring Decisions: What Employers Look for in Entry-Level Employees." Unpublished paper. University of Iowa.

Birman, Beatrice F. and Natriello, Gary 1978. Perspectives in Absenteeism in High School, Journal of Research and Development in Education 11: 29-38.

Bishop, John 1987. Information externalities and the social payoff to academic achievement." Working Paper #8706, Cornell University Center for Advanced Human Resource Studies.

Bishop, John 1989. "Why the apathy in American high schools?" Educational Researcher, 18:1,6-10

Borus, Michael. E., et al. 1984, Youth and the Labor Market, W.E.Upjohn Institute, Kalamazoo.

Bowles S. and Gintis, H. 1976. Schooling Capitalist in America. New York: Basic Books

Burtless, Gary 1984. "Manpower policies for the disadvantaged: What works?" Brookings Review, Fall, 18-22.

CED (Committee for Economic Development), 1985 Investing in Our Children: Business and the Public Schools. New York: CED.

Chabot , Richard B. and Garibaldi, Antoine 1982. "In-school alternatives to suspension: A description of ten school district programs" Urban Review 14: 317-36.

Combs,J. and W.W.Cooley. 1968. "Dropouts: In high school and after school." American Educational Research Journal, 5,343-363.

College Board. 1978. Taking the SAT: A Guide to the Scholastic Aptiturde TEst and the Test of Standard Written English. New York: College Entrance Examination Board.

Crain, Robert 1984, "The Quality of American High School Graduates: What Personnel Officers Say and Do" Johns Hopkins University, Unpublished paper.

Crouse, James. 1988. The Case Against the SAT. Chicago: University of Chicago Press.

Cusick, Philip A 1983. Inside High School: The Student's World, New York: Longman.

DeLeonibus, Nancy 1978. "Absenteeism: The Perpetual Problem." The Practitioner,5,13.

DiPrete, Thomas A. et al 1981. Discipline and Order in American High Schools. Chicago: National Opinion Research Center.

Diamond, Daniel E. 1970. "Industry Hiring Requirement and the Employment of Disadvantaged Groups" NY University School of Commerce.

Dunham, Daniel B. 1980. "The American experience in the transition from vocational schools to work." Presented to the International Symposium on Problems of Transition from Technical and Vocational Schools to Work. Berlin. ERIC ED186725.

Ellwood,David.T. 1982. "Teenage unemployment: Permanent scars of temporary blemishes?" in The Youth Labor Market Problem: Its Nature,Causes, and Consequences,edited by R.B.Freeman and D.A.Wise, pp. 349-84. Chicago: Univ. of Chicago Press.

Evans, Robert. 1986. "The transition from school to work: The Japanese Case." in

Educational Policies in Crisis, edited by William K. Cummings, E.R.Beauchamp, S.Ichikawa, V.N.Kobayashi, and M.Ushiogi, pp.210-239. New York:Praeger.

Farrar,Eleanor and Anthony Cipollone. 1988."The Business community and school reform: The Boston Compact at Five Years" unpublished paper, March.

Garbin,A.P., et al. 1970. Worker Adjustment Problems of Youth in Transition from High School to Work. Columbus: Center for Vocational Education, Ohio State University.

George, R. 1987.Youth Policies and Programs in Selected Countries. Wm.T.Grant Foun.:New York

Goodlad, J.I.1984. A Place Called School. New York:McGraw-Hill

Gottfredson,G.D. and D.C.Gottfredson. 1985. Victimization in Schools . New York:Plenum Press.

Granovetter, Mark. 1974. Getting a Job. Mass.Harvard Univ.Press.

Grasso, J.T. 1972. "The Contributions of Vocational Education, Training and Work Experience to the Early Career Achievements of Young Men." Ph.D. Diss. Ohio State University.

Griffin,J.L. et al. 1981."Determinants of Early Labor Market Entry and Attainment: A Study of Labor Market Segmentation" Sociology of Education.54:206-221.

Hahn.Andrew and Robt. Lerman. 1985. What Works in Youth Employment Policy?Washington,DC: National Planning Assn.

Hamilton, Stephen F. 1987. "Apprenticeship as a transition to adulthood in West Germany." American Journal of Education. (February): 314-345.

Heyns, Barbara. 1974. "Selection and stratification within schools." American Journal of Sociology. 79,1434-51.

Hill, Robert B. and Regina Nixon. 1984. Youth Employment in American Industry. New Brunswick,N.J.: Transaction Books.

Hotchkiss, Lawrence and L.E. Dorsten. 1987. "Curriculum effects on early post-high school outcomes." in A.Kerckhoff(ed.) Research in the Sociology of Education and Socialization, Vol.7, 191-219. New York: JAI Press.

Howe, Harold, et al. 1988. The Forgotten Half. New York: William T. Grant Foundation.

Jencks, Christopher and James Crouse. 1982. "Aptitude vs. Achievement: Should we replace the SAT?" The Public Interest.

Johnston, William B. et al. 1987. Workforce 2000. Indianapolis: Hudson Institute.

Kariya, Takehiko and James E. Rosenbaum 1988 "Selection criteria in the high school to work transition: Results from the High School and Beyond Surveys in the US and Japan. Presented at the Annual Meetings of the American Sociological Association. Atlanta,GA.

Kaufman, Jacob K. et al. 1967. The Role of the Secondary Schools in the Preparation of Youth for Employment . University Park, PA: Institute for Research on Human Resources, The Pennsylvania State University.

Kelly, D.H. 1974. "Track position and delinquent involvement: A preliminary analysis." Sociology and Social Research, 58,380-386.

Kirst, Michael W. 1982. "How to improve schools without spending more money,"PhiDeltaKappan, September:6-8

Lester, Richard A. 1954. Hiring Practices and Labor Competition. Industrial Relations Section, Princeton University.

Malm, Theodore F. 1954. "Recruiting patterns and the functioning of labor markets," Industrial and Labor Relations Review. 7,No. 4(July): 507-525.

McPartland,J.M. and E.L.McDill. 1977. Violence in Schools. Lexington Ma.: Heath Lexington.

Mare, Robert, C.Winship, and W.Kubitschek. 1984. "The transition from Youth to Adult: Understanding the age pattern of employment." American Journal of Sociology, 90,No. 2:326-358.

Meyer, J. et al. 1971. The Expansion of the Autonomy of Youth: Responbses of the Secondary School to the Problems of Order in the 1960's. Stanford, CA: The Laboratory for Social Research, Santford University.`

Meyer, Robert 1982. "An economic analysis of high school vocational education," in The Federal Role in Vocational Education, Special Report #39, National Commission for Employment Policy. Washington,D.C.:U.S. Government Printing Office.

Meyer, Robert H. and D.A. Wise 1982. "High school preparation and early labor force experience," Pp. 277-347 in The Youth Labor Market Problem, edited by Richard B. Freeman and D.A.Wise. Chicago: University of Chicago Press.

National Academy of Sciences (NAS)1984. "High Schools and the Changing Workplace:The Employers' View." Washington, D.C.:Natl Acad.Press.

National Assessment of Educational Progress(NAEP). 1985. The Reading Report Card. Princeton,NJ:ETS.

National Center for Educational Statistics. 1983. High School and Beyond:1980 Senior Cohort First Follow-up(1982): Data File User's Manual. Chicago: National Opinion Research Center.

National Commission on Excellence in Education, 1983. A Nation At Risk.Washington,DC:US Government Printing Office, April.

Nihon Seishounen Kenkyuujo. 1981. Koukousei Shourai Chousa(Research on Future Careers of High School Students). Tokyo.

-------. 1984. Gakkoukyouiku to Sono Kouka(Education and Its Effects). Tokyo.

Nolfi, George J. et al. 1978. Experiences of Recent High School Graduates. Mass: Lexington Books

Oakes, Jeannie 1985. Keeping Track. New Haven,Ct.: Yale University Press.

Osterman, Paul. 1980. Getting Starting: The Youth Labor Market. Cambridge,Ma.: MIT Press.

____1988. Employment Futures. New York: Oxford University Press.

Polk,Kenneth. and W.E.Schafer(eds). 1972. Schools and Delinquency. Englewoood Cliffs,N.J.: Prentice-Hall.

Resnick,L.1988."Learning in school and out." Educational Researcher, 16:9,13-20.

Rogoff,B. and J.Lave(eds.) 1984. Everyday Cognition: Its Development in Social Context. Cambridge,Ma.:Harvard Univ. Press.

Reubens, Beatrice G. 1974. "Foreign and American experiences with the youth transition." in E.Ginzberg(ed.) From School to Work.Washington DC: National Commission for Manpower Policy

Rosenbaum James E. 1976. Making Inequality. New York: Wiley.

_____1978. "The structure of opportunity in school." Social Forces 57, 236-256.

_____1980 "Social Implications of Educational Grouping," Pp. 361-404 in David C. Berliner (ed.), Annual Review of Research in Education., Washington: American Educational Research Assn.

Rosenbaum, James E. and Takehiko Kariya 1989. "Market and institutional mechanisms for the high school to work transition in Japan." American Journal of Sociology. May.

Sedlak, Michael W., C.W. Wheeler, D.C.Pullin,P.A.Cusick 1986. Selling Students Short. New York: Teachers College Press

Seeley, David S. 1984. "Educational Partnership and the Dilemmas of School Reform" Phi Delta Kappan: 65:6 pp. 383-388.

Spence, A. Michael. 1974 Market Signalling: Information Transfer in Hiring and Related Processes. Cambridge, Ma.: Harvard University Press.

Spring, Joel. 1986. "Business and the Schools: The New Partnerships" In Borman, Kathryn M, and Reisman, Jane (eds). Becoming a Worker. Ablex Publishing Corp. Norwood, N.J.

Stern,D., E.G.Hoachlander,S.Choy, and C.Bensen. 1985. One Million Hours a Day: Vocational Education in California Public Secondary Schools. University of California, Berkeley.

Stinchcombe, Arthur L. 1964 Rebellion in a High School. Chicago: Quadrangle

Sum,Andrew 1983 Post-program Employment Impacts of Jobs for America's Graduates Program Washington,DC: Jobs for America's Graduates.

Thompson, S. and D. Stanard. 1975."Student Attendance and Absenteesim."The Practitioner 1:1-12.

Trow, Martin. 1961. "The second transformation of American secondary education." International Joural of Comparative Sociology, 2,144-165.

U.S. Department of Education. 1987. Japanese Education Today. Washington: Gvt.Printing Office.

Wagenaar, Theodore. 1987. "What do we know about dropping out of high school?" in Kerckhoff, A. (ed.) Research in the Sociology of Education and Socialization, vol. 7: 161-190.

Willis, Robert and S.Rosen. 1979. "Education and self-selection." Journal of Political Economy, 87: 527-536.

Wilms, Wellford W. 1974. Public and Proprietary Vocational Training: A Study of Effectiveness. University of California,Berkeley, Center for Research and Development in Higher Education.

5. SECOND CHANCE BASIC SKILLS EDUCATION

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5. SECOND CHANCE BASIC SKILLS EDUCATION

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Millions of Americans find they need a second chance to improve or refurbish their basic literacy and computational skills. In part, this is due to a gap between the basic skills abilities needed to be productive in the workplace and the ability levels of a significant percentage of workers. Skills demands of many jobs have increased while a large proportion of very low skilled jobs have disappeared or shifted to nations where labor is less expensive (Johnston & Packer, 1987). The picture is complicated by the fact that technology has also created some very visible minimum wage, no-skill jobs from which advancement is unlikely.

The general increase in the demand for workplace basic skills mirrors the general increase in societal basic skills demands. Newspaper wire service stories, like the majority of reading material in the workplace, average high school level in difficulty (Mikulecky, 1987). The average worker uses print material 2-3 hours daily on the job (Mikulecky, 1982) and faces comparable print demands in life's other roles (i.e. consumer, citizen, parent, patient, student, church-member, etc.).

Many adults find that their basic reading, writing, computation and problem-solving skills are insufficient for life's current demands. They enroll in no-charge basic skills programs -- some attempting to complete high school educations, others to brush up on skills in a specific area, and still others struggle to keep ahead of their own school age children. All are partaking of second chance basic skills education.

Individuals needing second chance basic skills education range from recent high school graduates with poor educations to drop outs to mature adults facing retraining in mid-career. The target population encompasses Americans who are employed, underemployed, and unemployed. Its members potentially include the tens of millions of adults who, over the past four decades, either dropped out of school or managed to graduate with basic skill abilities below the current demands of the workplace. To these millions are added the growing millions of Americans for whom English is a second language. A disproportionate percentage of those needing second chance basis skills are Blacks and Hispanics from low economic backgrounds and schools with low success records.

Programs and Populations

Second chance basic skills programs are offered by a wide variety of providers. The vast majority of these programs are free to users. Most learners are served by federally and state funded adult basic education (ABE) classes held in settings which include school buildings, community centers, correctional institutions, YMCA's and shopping centers. During a one month period in the Spring of 1985, a survey was made of state funded adult literacy programs in the fifty states and Washington D.C. During that month, over 729,000 adults were reported as receiving services (Bowker, 1987). Since there is a good deal of turnover among learners in adult basic skills programs, the total number of learners served in programs over the period of a full year is likely to be considerably higher.

Comprehensive national demographic data are not available on who attends these basic skills classes. The Literacy Assistance Center, however, has compiled data on the 40,000 learners involved in basic skills programs in New York City (Cook, 1986). Data from a large urban center can provide some indication of who attends classes, at least in urban centers. Of the 40,000 New York City learners, nearly 52 percent were enrolled in basic education classes while another 45 percent were enrolled in classes to teach English as a second or other language.[1] Of the basic education students, 10.7 percent are reported to read below a third-grade level and 25.3 percent read below a fifth-grade level. In New York City, 41 percent of students are male and 59 percent female. The typical learner is likely to be female, a member of a minority group (89 percent), and between the ages of 25 and 45 (52 percent). One third of learners are between the ages of 16 and 24.

In addition to state funded ABE programs, adults with low basic skills are served by volunteer organizations, private industry programs, college and university sponsored basic education, and basic skills classes attached to job training programs. Several programs are also offered informally by private citizens and community and church organizations (Cross, 1984; Hunter & Harman, 1979). No full census of learners has been done and a complete census of all programs is probably impossible since many programs keep inadequate records either as a result of low funding or to insure learner anonymity. A recent public policy report estimates that as many as 3-4 million learners may be served by the total of all public and private, formal and informal programs (Chisman, 1989).

Potential Populations vs Served Populations.

Most program reports in the research literature estimate potential local learner populations by extending estimates of the percentage of functional illiterates taken from national studies. Depending on the literacy level selected as constituting functional literacy and the study cited, national figures of adults experiencing literacy difficulty range from 20 million to over 40 million. Examples of typical local estimate projections from these national data include 90,000 functional illiterates projected in Delaware County, Pennsylvania (Gaul, 1985) to over two million adults needing literacy assistance estimated in the state of Illinois (Illinois Community College Board, 1987).

Populations actually served by programs rarely amount to more than a minuscule fraction of estimated target populations. Percentages of low literates served range from less than one percent reported by California and Washington State programs (Lane, 1984; and Carbone, 1987) to nearly five percent of targeted population served reported by a local Reno, Nevada program (Bear, 1987).

There are several problems with using national population estimates of illiteracy to determine local populations of low literates. Initially, some locations vary considerably from national averages. For example, the percentage of low literates in Louisiana or Mississippi or Texas is nearly triple that of Utah (Brizius & Foster, 1987). Secondly, the criteria for being a member of the target population may be inappropriate. Several researchers recommend caution in determining who needs literacy education help. For example, Fingeret (1983) maintains that many low literates use social networks of friends and relatives to help them with daily basic skills demands and therefore may not need additional help. Other researchers argue that simply because someone has managed, through the help of others, to function in society does not mean that they are productive, safe, or guaranteed to continue functioning (Mikulecky, 1987).

Though conclusions about need are arguable, it does seem clear that many adults do not perceive themselves as needing or wanting help. Strong indications about low self-perception of need for help among low literates has been cited by Jones (1988) in reference to Canadians. The Canadian version of the recent U.S. national assessment of adult literacy (Kirsch and Jungeblut, 1986) added an item asking adults if they thought they needed help with literacy. The Canadian study (Calamai, 1987) found that nearly 90 percent of adults who failed the test thought they didn't need help (Jones, 1988). This does not, of course, mean that adults who score poorly on basic skills tasks do not need help. It simply means that they are not likely to seek help since they don't perceive themselves as needing it.

Evidence for Unmet Needs.

Even though estimates of potential low literates needing help are questionable, evidence does indicate a significant need for second chance basic skills instruction. The 1985 survey of adult literacy programs cited earlier (Bowker, 1987), reports an average of 30 percent of programs have waiting lists. In urban areas 47 percent of programs report waiting lists. The lists average over sixty individuals per program which is nearly 35 percent of average program size. In such programs, for every three learners inside, there is an adult outside asking for help. Skagen (1986) reports that inadequate funding forced the state of Illinois to turn away nearly as many potential learners as the 117,000 it served.

Another indication of the gap between service and need is demonstrated in a Pennsylvania state report (Pennsylvania Association for Adult Continuing Education, 1981). More adolescents drop out than adult low literates are served each year. Further, it is unlikely that more than a small fraction of adults served actually reach a high level of basic skills competence. During 1979-80, 29,000 adults of all ages were served by the state adult basic skills programs. During the same time period, 31,000 adolescents dropped out of Pennsylvania high schools. Though figures are likely to vary from state to state, we may be falling further behind in basic skills education each year.

A third indicator of the gap between existing service and demand can be seen in the rapid growth of voluntary literacy programs. The number of learners served by the Literacy Volunteers of America in 1987-88 was 28,005, a 47 percent increase over the past two years (Wright, 1989). Waiting lists reported by practitioners suggest that the demand has not yet been met.

Professional Instructors and Volunteers

For the most part, basic skills instruction in the United States is provided by part-time teachers and by volunteers. For FY 1985-86, the U.S. Office of Adult Education reports that service was provided by over 82,000 instructors in its programs. Of these instructors, only 8 percent were full time while 67 percent were part-time and 25 percent were volunteers (Pugsley, 1987).

Paid Instructor Qualification and Training.

Levels of training and certification among instructors is quite low (Harman, 1985). Skagen (1986) notes that most paid ABE instructors are moonlighting elementary and secondary teachers who have no special training in teaching adults. Chall, Heron & Hilferty (1987) observe that staff turnover is very high, most instructors hold more than one job, and some shuttle between two or more local literacy centers. Instructors who have little training upon entering programs are unlikely to get much new training from the programs which employ them. Monies for travel and inservice rarely exceed one percent of total literacy program budgets (Vorst, 1988; Illinois Community College Board, 1987). Because resources are spread thinly, part-time instructors often work alone without immediate supervision and are thus even cut-off from co-worker's informal instruction.

Volunteer Tutors Level of Participation and Training.

A 1985 survey of volunteer use indicates that volunteer tutors were used, to some degree, by nearly half of state and federally funded adult education programs and nearly all local adult literacy programs (Bowker, 1987). The vast majority (92 percent) serve as one-on-one tutors while 39 percent teach small groups, and 8 percent teach classes. The contribution of these volunteers in terms of time and energy is significant. The Literacy Volunteers of America report having nearly 29,000 volunteers who averaged 50 hours of service per volunteer during 1987-88. The Literacy Volunteers of America report nearly a thousand more tutors than learners. This suggests that not all tutors are equally involved and some may be inactive (Wright, 1988).

Volunteers typically receive from 10-15 hours of training, a good deal of which is directed toward pragmatic issues such as where materials are located, where to meet with learners and how to contact supervisors. There is considerable concern that such meager training is insufficient when one must work with individuals having severe learning problems. For example, most programs (86 percent) offer one-on-one basic literacy instruction to low literates below the fourth grade reading level (Bowker, 1987). Paid teachers are more likely to teach classes while volunteers work with individuals. Indeed 92 percent of volunteer tutors work mainly with individuals. Very low literates, however, are extremely likely to have severe learning problems. Keefe and Meyer (1988) used a battery of professional diagnostic tests to screen 114 adult learners in an Adult Basic Education program. Of low literates below the third-grade reading level, over 70 percent had uncorrected or uncorrectable vision problems and half had auditory discrimination problems which confounded their abilities to learn to read.[2] These sorts of learner problems are not easily diagnosed by untrained volunteers and often frustrate teaching techniques learned in superficial training.

Program Effectiveness

Second chance basic skills programs document effectiveness using a variety of indicators. Among these indicators are ability to recruit and retain learners, tested achievement gains of learners, and progress toward employment or other learner identified goals.

Recruitment and Retention.

Second chance basic skills programs have not done very well at either attracting or retaining a significant number of learners. Recruitment appears to be improving, but there is no current evidence for improved retention.

Though current media campaigns have helped in the recruitment of adult learners, the general consensus among adult educators is that personal sources like teachers, counselors, friends, and relatives are more effective for recruitment than impersonal sources like the media (Balmuth, 1988). Carbone (1987) reports that even in the light of a national television literacy awareness campaign, only 17 percent of clients in Washington State programs reported becoming aware of literacy help through the media. Teachers, counselors, social-welfare agencies as well as friends and relatives were all ranked higher by learners as resources of knowledge about programs. Fowler (1986), working for the Center for Survey Research at the University of Massachusetts, performed a survey of adult literacy programs and resources for the Coalition for

Literacy. The initial impact of literacy advertising in the mid-1980's is evident in increases of approximately 9 percent in both learners and budgets between the autumns of 1984 and 1985. During the same time period, there was a 28.7 percent increase in volunteer tutors. It may be that media advertising is more effective in recruiting tutors than those needing basic skills help.[3]

Retaining learners long enough for programs to have an impact is a major problem (Balmuth, 1988). Military data (Sticht, 1982) and large program data such as that of New York City (Denny, 1988) indicate that it takes an average of approximately 100 contact hours for a learner to improve a single grade level. Military programs described by Sticht (1982) are usually much more intensive (i.e. approximately 20 hours per week) than traditional Adult Basic Education programs which provide 2-3 hours of instruction to a learner per week. Less intensive programs have been sometimes identified as exemplary, however, and demonstrated the ability to accomplish the equivalent of one year's gain in approximately 50 hours (Darling, 1984; Pasch & Oakley, 1985).

High quality instruction helps a good deal, but a significant amount of time is needed for even the best programs to have an impact. No program in the literature reports holding average learners as long as even 100 hours per year. It takes several hundred hours of learning time to move a learner from sounding out words on road signs to a being able to comprehend most newspaper stories. In typical state funded ABE programs, learners voluntarily attend two to three hours per week with high rates of absenteeism. Only 20 percent of learners persist a year or longer (Darkenwald & Valentine, 1985; Development Associates, 1980; Diekhoff & Diekhoff, 1984; Pasch & Oakley, 1985).

Programs without state funding and only volunteer tutors may fare even worse. The Literacy Volunteers of America report having approximately one tutor for each learner. The organization estimates that tutors averaged 50 hours of contributed time during 1987-88. This estimate would indicate that most learners receive less than an hour of instruction per week. An alternative explanation would be that most learners leave volunteer tutoring programs well before 50 hours and a few others receive more attention. In either case, low learner attendance times in volunteer tutoring programs suggest major learner gains are unlikely.

Diekhoff (1988) analyzed the records of 194 former participants in a community-based adult literacy program in Texas. The program was above average in effectiveness in that the average reading gain from entry to exit was 1.6 grade levels in 9.8 months. Diekhoff finds the significance of the gain questionable, however, since few learners left the program able to function with normal reading demands. The author identified only 12 percent of learners who exited reading above the 7.5 grade level. A 7.5 grade level doesn't qualify one to read very much. The sports page of most newspapers averages about an eighth grade reading level while wire service stories and most job-related materials are much more difficult (Wheat, Lindberg & Nauman, 1977; Mikulecky, 1982). Less than 5 percent of the 194 learners would have been able to accurately summarize a wire service newspaper article. Even so, in order to reach or exceed the 7.5 grade level, the 24 students needed to improve an average of 4.2 years in ability and averaged 23.5 months in the program. Attending literacy program sessions regularly for two years is beyond the performance of nearly all learners currently enrolled in programs.

Data on learner gain in measured competence is difficult to find. It is much more typical for programs to report effectiveness in terms of general statements. For example, the Commonwealth of Pennsylvania reports that for 1985, 29,409 learners were enrolled in programs and 25,531 or 87 percent of learners met their personal objectives. What the personal objectives might be or how meeting them was determined is not clear (Pennsylvania Department of Education, 1986).

Sometimes the reports seem to contradict themselves. For example, the same Pennsylvania Commonwealth report indicates that nearly 45 percent of learners entered programs with the goal of passing the GED test. Later in the same report, only 13.3 percent of learners are listed as passing the GED test. This seems to contradict the earlier contention that the vast majority of learners had met their personal objectives. It is possible, of course, that learner objectives may have changed. In the Commonwealth of Pennsylvania, 66 percent of adult learners are reported as improving in basic skills. What that means in terms of improved learner functioning is not clear, though 6 percent of learners reported finding jobs and nearly 8 percent entered other education and training programs (Pennsylvania Department of Education, 1986).

Funding and Cost-Effectiveness.

Bowker (1987) reports that 83 percent of literacy instruction was received by adults in state funded adult education programs. Funding in such programs comes primarily through the federal Adult Education Act of 1966 with amendments in 1978 to extend services throughout the public and private sector. The Adult Education Act provides mainly federal funding (90 percent) with a required 10 percent state contribution of funds (Delker, 1984). In 1985, this amounted to approximately $81 million (Congress of the United States, 1987).

In May of 1986, a congressional staff study was undertaken to analyze the Literacy Management Information Project Report (LMIPR) which claimed to itemize federal funding for adult literacy programs. The LMIPR indicated that there are 79 literacy-related programs administered by 14 federal agencies and that $347.6 million was spent on adult literacy activities in 1985. In order to verify the LMIPR report, the committee made telephone surveys of the 79 literacy-related program directors and randomly contacted 20 state directors. A good deal in the LMIPR figures appears to be questionable. The congressional study found that:

- Of the 79 programs in 14 federal agencies reported in the LMIPR, only ten programs (13 percent) in five federal agencies reported actually conducting literacy activities.
- Several programs reported receiving no funding for literacy programs.

- In FY 1985, only $126.5 million or 36 percent of the reported $347.6 million was spent of literacy activities for adults (Congress of the United States, 1987).

The Canadian government spends considerably more, per capita. The Canadian population is approximately 10 percent the size of the U.S. population. Rosemary Sparks of the Ontario Ministry of Skills Development (1989) reports that the Canadian federal government is scheduled to spend $110 million on adult literacy in 1989. Instead of the 10 percent matching funds provided by most U.S. states, Canadian provinces provide significant funding for adult literacy at the provincial level. Ontario, for example, will spend $50 million on adult literacy programs in 1989. If the same ratio of spending were present in the United States, adult literacy budgets between one and two billion dollars would be in order.

Funding for most Adult Basic Education programs in the United States is usually a combination of state and federal monies augmented by a variety of contributed resources. Though many programs rely almost entirely on state and federal support, some programs are able to generate additional resources and accomplish a good deal more than state and federal funding could possibly support alone.

An example of this type of expanded support can be found in the Lafayette Adult Reading Academy (LARA) which recently won a U.S. Department of Education award for Outstanding Adult Education. In 1987, the LARA provided nearly 50,000 learner contact hours and nearly 7000 hours of paid instruction. Over 800 learners averaged 58 hours of contact per year at an average cost of $4.59 per hour or $266 per registrant. Federal and state monies of approximately $55,000 covered administrative costs and salaries of the Academy's part-time teaching staff. The Academy staff has extended its resource base by developing additional resources. They have:

1) trained 150 volunteer tutors,
2) solicited grants from Target, Alcoa, and Pillsbury for offering specialized on-the-job literacy training, and
3) received small donations of money, materials, and goods from local businesses, agencies, school corporations, clubs and individuals (Vorst, 1988).

Most adult basic skills programs have narrower support, rely more heavily on state and federal funding, and work with fewer learners.

Reported costs per learner in other programs are of the same order of magnitude as the Lafayette program though the cost per instructional hour is often slightly less. Average learner costs per year in New York and Nevada are $272 and $184 respectively and costs per hour of instruction are $1.85 and $2.60 respectively (New York State Education Department, 1986; Bear, 1987). Higher program costs per hour of instruction in the Lafayette program can be attributed to more highly trained and expensive instructors, to instructors' time spent helping write grant proposals to generate resources, and non-instructional time spent training and supervising volunteer tutors.

Another perspective on Adult Basic Education costs is to compare them to the costs of private tutoring and of public school education. The International Reading Association (Committee reports..., 1989) reports results of a survey of private reading clinics and tutoring services. The average private service charges from $21 to $30 per hour of individual basic skills instruction. A year's worth of instruction at 3 hours per week would cost from $3276 to $4680. The public schools spend an average of $4000 per child each year (Chisman, 1989). This purchases approximately 1000 hours of instruction per year in classes of 25-30 students at a cost of approximately $4.00 per instructional hour. Adult Basic Education programs are not able to provide anywhere near 1000 hours of instruction per year for each learner. The instructional hour cost of providing one-on-one or small group instruction in Adult Basic Education centers is close to or below public schools costs for providing large group instruction, however. The cost of adult basic education is a minuscule fraction of private tutoring or public schooling costs. The ineffectiveness of much adult basic education instruction may well be a "you get what you pay for" phenomenon with some magnificent exceptions to the general rule.

Cost Effectiveness of Volunteer Tutoring.

Volunteer tutors have contributed a significant amount of time to helping others learn to read. It is not clear how effective they have been compared to social expectations or even compared to paid instructors. Because volunteers provide their time without charge, policymakers sometimes conclude that volunteers are a simple and cheap solution for adult literacy problems.

There are, however, significant costs in providing volunteer tutoring. For example, volunteers must be properly recruited and trained and trainers of volunteers must themselves be trained. Moreover volunteers must be supervised and supported by experts and other professional personnel -- especially when dealing with low literates with severe learning disabilities (Harman, 1985). In addition, they need to be provided with appropriate instructional materials, provided workspace, evaluated, and provided help in solving tutoring problems. A ratio of one supervisor to four volunteer tutors is commonly needed (Woods Gordon, 1988).

Often the resources invested in recruiting, training, and developing volunteer tutors has limited impact. Many tutors work with only one or two learners during a year and then leave programs. The dropout rate among tutors is quite high, so recruiting and training resources are often wasted. Rogers (1984) notes that one Literacy Volunteers of America program trained 244 tutors in a six year period. At the end of that period, 91 percent of tutors had dropped out of the program. For the most part, each year sees a new contingent of untrained tutors with only a few carry-over tutors.

In summary, since the effectiveness of volunteer tutors is unclear, the cost-effectiveness is not possible to determine. It is clear, however, that volunteer tutoring programs are not cost-free and, given the high dropout rates of tutors, may not be particularly cost-efficient. There may be intangible benefits to volunteer tutor programs in terms of tutor's heightened sensitivity and awareness of literacy problems.

Impact on Earnings.

No controlled study exists to substantiate the relationship of basic skill improvement to improve earning ability. Program reports at local levels sometimes identify numbers of individuals who have found employment and left programs, but no study identified by this author causally links such employment or improved earning ability to basic skills improvement. No study was found to compare new employment of basic skills students to that of a control group receiving no instruction.

Broadly based correlational studies do identify a clear relationship between basic skill levels and income (Berlin & Sum, 1988). Mikulecky and Strange (1986) describe an intensive, integrated basic skills/wordprocessor training program in which 70 percent of participants moved from receiving state support to earning $20,000+ per year on jobs as word processor operators. Entrance to the program involved passing several screening tests. Program participants were paid to take training for 40 hours per week for up to 26 weeks. Participants were only released from the program to apply for jobs when they demonstrated basic and technical skills equivalent to the average word processor operator in the local area. This required most participants to improve the equivalent of 3 grade levels in reading and writing abilities during the 6 month period of training. Participants of this intensive program received more training in two weeks than 90 percent of adult basic education students receive per year. They received more training in 26 weeks than most basic skills program participants would receive in 13 years were they to attend that long.

New Directions: Technology and Workplace Literacy

During the past few years, there have been a number of promising new developments related to second chance basic skills education. Among these are an increase in the number and sophistication of workplace basic skills programs and the increasing potential of technology to help overcome some of the problems which have plagued basic skills education.

Multi-Strand Basic Skills Programs in the Workplace.

There appear to be at least three major workplace basic skills problem areas -- each calling for a slightly different solution. These problem areas relate to:

1) extreme low level literates (i.e. those unable to function independently with even simple print),
2) new and experienced workers who can read at a moderate level (i.e. as high as the sports page), consider themselves to be literate, but derive little benefit from expensive training because of insufficient reading, computing and study abilities, and
3) workers at nearly all ability levels who make some job related literacy mistakes which influence safety, productivity, and promotability (Mikulecky and Drew, 1989).

The first problem area listed is the area involving the smallest number of workers (below 5 percent) and is yet foremost in the public mind. Surveys of corporate literacy training indicate that up to 25 percent of major corporations fund basic education training and that this percentage appears to be increasing (Lusterman, 1977; Mikulecky &

Cousin, 1982; Baar-Kessler, 1984). This training for very low skilled workers ranges from in-plant basic education programs (BCEL, 1987) to funding for employees to attend community basic skills education and G.E.D. classes.

The second problem area (i.e. low basic skills which limit the effectiveness of technical training) is less recognized but effects a larger percentage of workers. The vast majority of workers in many industries hold high school diplomas and don't perceive themselves as having basic skills difficulties. Management expectations of increased training and performance, however, often reveal that worker self-perceptions are inaccurate. For example, a recent survey of a manufacturing concern (Mikulecky, 1988) revealed that over a half million dollars was spent on yearly training for 700 employees. For hourly employees, most of whom had graduated from high school, training involved taking specialized courses from a local technical college. Nearly 20 percent of hourly employees were unable to meet the technical college's minimal reading and mathematics entrance requirements (approximately an 8th grade level of achievement).[4] Most of these workers considered themselves to have no basic skills problems, but their tested reading and math abilities were below minimum levels needed for successful on-going training. One in as many as four or five hourly workers may be ill prepared to benefit from required technical training.

The third area of basic skills problems (i.e. literacy and math mistakes related to safety, productivity, or promotability) can happen at any level. Literacy task analysis or literacy audits of key job tasks may be required to determine the extent to which literacy based mistakes are endangering lives or costing money (Mikulecky, 1985; Drew & Mikulecky, 1988; U.S. Departments of Education and Labor, 1988). Henry and Raymond (1982) identify literacy and math related safety mistakes to be the major literacy problem reported by employers. Literacy related productivity problems relate to mistakes (i.e. the need to redo correspondence or other paperwork) and inability to implement new productivity innovations. For example, low literacy levels can limit the productivity of quality circle meetings in which hourly employees address productivity and quality control problems. These meetings are used in many industries and are designed to increase the responsibility of workers in spotting problems and developing solutions. To encourage open discussion, it is often desirable for management to be absent from meetings. At such meetings, notes are taken and key ideas submitted in written form. At a major manufacturing concern, nearly 25 percent of quality circle groups had no employee capable of taking and writing notes which could communicate to a person not attending the meeting (Mikulecky, 1988). Similar problems occur with suggestion boxes or federal "whistle-blower" programs which request workers to submit written ideas about safety infractions or improved productivity.

Most worksites experience all three of the above problem areas. It is unlikely that a single approach will solve all problems. What is called for is a multi-strand approach. Such an approach offers varying solutions to varying problems.

The most prevalent strand is designed for low level literates. Such workers need long term support with improving their basic skills. It may take several hundred hours of instruction before a worker who can barely read a product label is able to trouble shoot using a manual for computerized equipment.[5] Economic support for basic education is one way that employers can help provide such long term support. Some employers also offer in-plant basic skills programs with time contributed by both employer and worker. Such programs have the advantage of making workplace materials more easily accessible to instructors and communicating to workers the value management places upon a capable workforce.

The second workplace literacy program strand is directed toward middle level literates who are ill equipped for technical training. The needs of these workers can often be addressed by integrating basic skills training with technical training. Technical schools and in-plant instructors can organize class periods to briefly teach such study skills as how to use textbooks or how to take notes related to the technical material covered. On a regular basis, technical and vocational instructors can use 10-15 minute sessions to demonstrate how to take notes or gather key information from a text. Technical instructors can also be taught to make use of the host of tested ideas available to content area reading specialists (i.e. developing study guides, pre-teaching key concepts, individualized assignments, alternate readings, etc.). Trainers find that they must work increasingly with workers who have been away from school for decades or workers who didn't learn much in school when they attended. Many of these trainers have previously worked with self-starters and individuals who knew how to learn (mainly college educated managers or workers on professional or semi-professional tracks). The implication here is clearly that trainers of hourly workers may need to receive some retraining in their own right in teaching workers basic learning skills along with technical skills.

The final workplace literacy training strand is directly related to local safety and productivity issues. It implies a careful analysis of the key workplace tasks involving basic skills and is likely to lead to custom-designed materials and training. Such analyses may identify areas where workers need training, documents which need to be redesigned, or job descriptions which need to be rewritten. Several suggestions for how to develop such a strand have appeared in print (Mikulecky, 1985; Cornell, 1988; Drew & Mikulecky, 1988; U.S. Departments of Education and Labor, 1988). All involve some form of on-site analysis and diagnosis of the tasks, strategies, and materials needed to perform competently.

Technology and Second Chance Basic Skills Education.

Duffy (1985) has described in some detail effective computer and video-disc technology used for basic skills simulations in military programs. Though quite expensive, these military applications appear to be effective. There are promising possibilities inherent in using computer and video technology to devise expert systems to model and diagnose difficulties with a variety of basic skills tasks. Turner (1988) and Young & Irwin (1988) have documented the high value adults place upon such computer learning benefits as privacy, feedback, flexibility and control. The ability to teach when the learner rather than the teacher is available is extremely attractive. Though a good deal of promising research is currently in process at this writing, we have much to learn about the effectiveness and limits of technological basic skills training. The difficulty is in separating the inherent strengths and limitations of the technology from the weaknesses inherent in poorly designed instructional programs.

Cost Effectiveness of New Basic Skills Training Methods.

No coherent body of research exists on the cost effectiveness of technology driven basic skills education and of workplace basic skills training. Some evidence, however, suggests these new approaches may be very effective. Sticht (1982) has documented that learners who master basic skills with material related to their jobs retain most of what they've learned while more than half of gains made with ordinary learning material disappear within eight weeks.[6] Some initial work has attempted to estimate the cost of low level literacy to society in general and to business in particular.

Newspaper accounts and some survey information suggest that worker literacy mistakes cost a great deal in dollars and injuries (Hymowitz, 1981; Henry & Raymond, 1982). Kozol (1985) has attempted to draw broad inferences on the national cost to the U.S. of functionally illiterate adults and the Canadian Business Task Force on Literacy (1988) has attempted more systematic estimates of costs to Canadian business and society. A survey of Canadian expert opinion and projections from known costs place estimated illiteracy costs to Canadian business at four billion dollars annually. Using the traditional 10:1 population ratio for U.S.A./Canadian conversions, this would suggest a figure approaching forty billion dollars annually for the United States. Societal costs, including fractions of costs for incarceration and social insurance programs, are estimated at ten billion dollars annually in Canada ($100 billion by extension to the U.S.A.).

No systematic attempt has been made, however, to determine the cost of workplace literacy deficiencies in terms of:

- accidents and mistakes;
- lost worker time while avoiding print and seeking oral information; and
- lost manager time in terms of repeating oral explanations.

Such base-line information is needed to determine the cost-effectiveness of training.

A related issue considered by business training departments is who is worth training. Traditionally, educators have taken the position that everyone should learn as much as possible and the role of the educator is to teach and facilitate that learning. Workplace training is often concerned with the cost/benefit ratio of training. Military research (Sticht, 1982) indicates that a grade level gain in reading ability takes approximately 100 hours of engaged literacy training time. Focussing on job specific training can cut the time but ability gains may be limited somewhat to job specific reading materials (Sticht, 1987). More research needs to be done to determine the amount and types of literacy training required for needed worker improvement and upon the cost effectiveness of a mixture of training, redesigning materials, and redesigning jobs.

Problems and Policy Options

Second chance basic skills education is not very effective in the United States for a variety of reasons which can be addressed with the policy options outlined below. If the underfunded and relatively ineffective system were maintained at present levels, the 1985 funding level of $126.5 million would need to be increased to $153.9 for 1990 based on a 4 percent average inflation rate. If the same system were simply made available to the 30 percent of adults on waiting lists, the funding level would need to be increased to $200.1 million.

Simply continuing with current programs is not a wise choice, however. Among the problems of current programs are:

1) Extremely low enrollment of target populations into programs.
2) Significant waiting lists in existing programs.
3) Inability to retain in programs the vast majority of learners long enough to make a significant functional difference in skill levels.
4) The uneven quality of instruction (i.e. learners in effective programs learn at double the average rate).
5) Lack of knowledge about several key aspects of basic skills education (i.e. effectiveness of volunteers and technology, impact on productivity and safety, etc.).

Two publications, Enhancing Adult Literacy by Brizius and Foster (1987) and Jump Start by Chisman (1989), have effectively outlined state and federal policy options in relation to basic skills education. Many of the ideas suggested in this document are drawn from these two publications.

Addressing Enrollment and Retention.

Low enrollment and retention in basic skills programs are the result of several factors. Many low literates don't perceive themselves as needing help and don't choose to seek help even if they admit to difficulties. Others are unaware of the availability of help or lack the experience and confidence to seek help. Many learners who want help are prevented from receiving it by program waiting lists, lack of transportation, or lack of childcare. The slow progress attached to only 2-3 hours of weekly instruction or low quality instruction disheartens learners and leads to attrition.

Incentives.

Incentives for learners and program providers can be created by restructuring requirements for many existing state and federal programs. Social support for individuals who fall below low skill criterion levels can be more closely tied to being in training programs and making progress (Brizius & Foster, 1987). Indeed, increased support could be linked to increases in learner skill levels and phased out as steady employment provides higher income. Several states have already implemented or begun discussing incentive and mandatory requirement programs of one sort or another.

Some of these approaches could be models for federal policy options. Governor Ashcroft of Missouri has proposed a "Learnfare" program which would require AFDC parents who haven't completed high school to enroll in basic education and job search programs. Virginia has instituted a "no read, no release" program in which reading to a 6th grade level is an important element in considering probation requests. North Carolina has considered whether it should refuse to hire drop outs who are not seeking further education. Some states are considering school completion or enrollment in an educational program as a condition for receiving a driver's license (Brizius & Foster, 1987). Recent media reports also suggest that West Virginia's plan to revoke driver's licenses of drop-outs below the age of eighteen may have lowered drop out rates by 30 percent.

Program providers should also face incentives for increasing enrollment and retention of basic skills learners in appropriate programs. Local applicants for state or federal social service funding can be given special consideration if they develop cooperative strategies for agencies to provide transportation, day care, and basic skills education to targeted learners. Decisions for funding can also be weighted in favor of programs which involve community groups and other social agencies in identifying and referring learners. Many of these incentives can be developed using existing monies and clearer guidelines for funding applicants.

Tax incentives for businesses and individuals can increase the recruitment and retention of learners in basic skills programs. Industries with a high percentage of displaced workers or other adjustment problems can be targeted with tax support for basic skills programs. Expanding tax credits for on-the-job training to include a wider range of basic skills activities could encourage increased workplace basic skills programs. The overall cost of these efforts would be determined entirely by which industries were targeted and what degree of tax incentive were allowed. These incentives should be linked to guidelines which require significantly more training than the ineffective 2-3 hours weekly training now provided in most government funded programs. Tax incentives could also be developed to enable employers to raise salaries as workers improve in skill levels. Sometimes incentives can be brought about by simply redirecting current taxes. For example an unemployment insurance program in California allows employers to redirect a portion of unemployment insurance payments to a special fund for retraining current workers.

Increased Direct and Indirect Service.

Few basic skills education services are provided directly by state or federal government. Exceptions are state and federal delivery of services in correctional institutions, some vocational programs, and some military programs. For these programs, increased funding to reduce program waiting lists and to enhance recruitment is in order. In addition, more direct basic skills education service could be provided by existing programs. For example, at the state level, many programs have taken on educational and referral roles with clients. Natural resource agencies in 38 states have included literacy training as an integral component of Civilian Conservation Corps type programs. In Tennessee, unemployment insurance counselors use special guides to diagnose and refer low literate applicants. In Vermont, unemployment checks are accompanied by cards recruiting basic skills learners. Similar programs could be instituted by federal agencies or encouraged by federal incentives.

The majority of federal basic skills support is indirect through Adult Basic Education, Adult Vocational Education, and Job Partnership Training Act funding.[7] In addition, the federal government claims indirect literacy support through 14 federal agencies which have been reported to fund 79 literacy related programs. The congressional analysis of the government listing suggests the majority of programs cited do not yet offer literacy support and many program directors are unaware that they are expected to offer basic skills support. Only 36 percent of the budgeted money claimed appears to be actually used for basic skills support. Clearer bureaucratic communication and administration could go a long way toward using allocated funds more effectively. Chisman (1989) suggests the most profitable targets for increased funding and/or clearer guidelines for accountability are the Job Partnership Training Act, the Carl D. Perkins Vocational Education Act, the Adult Education Act, the Family Support Act, the Even Start Program, and Volunteers in Service to America.[8] In all of these programs, emphasis should be placed upon solutions which provide a significant amount of contact to learners in need of basic skills training and monitor learner gain. Two to three hours of training per week is not sufficient, in most cases, to make acceptable learner gains. Suggested additional funding levels for the programs mentioned above are: 1) Additional $100 million to J.P.T.A. for large workplace literacy demonstration programs, 2) Additional $64 million to the Adult

Education Act State Grant program to bring funding to the $200 million approved for FY 1989, 3) Fund Even Start at the $35 million level, and 4) Add $3 million to VISTA funding for innovative use of voluntary programs. These suggested figures are drawn from the computations done to produce Jump Start (Chisman, 1989).

Increasing the Quality of Knowledge and Instruction.

Adults learn in ways significantly different from children (Valentine, 1987). School learning is considerably different from workplace learning (Mikulecky, 1982). We know very little, however, about how adults with low basic skills best learn. We also have very little information on the limits of training with low literate adults or the impact of improved basic skills on productivity and safety. We know that in terms of learner gain, the best programs are twice as effective as average programs, but we have little evidence on the best ways to move average and below average programs toward excellence.

Policy Options for Increasing Knowledge.

Policy options for increasing research knowledge about improving adult basic skills include:

- ear-marking larger amounts of currently allocated Department of Education and Department of Labor research funding to target adult basic skills issues ($7 million);
- establishing a National Center for Adult Literacy (Chisman, 1989) which would conduct basic and applied research, provide technical assistance to professionals and

policymakers, and maintain a national data base to monitor the field ($30 million); and

- providing incentives for business to sponsor research of the effectiveness of basic skills training within specific industries.

Policy Options for Improving Quality of Instruction:

Improving the quality of instruction is a more difficult policy issue. Since few basic skills providers are directly employed by the federal government, direct intervention is usually not possible. Low quality instruction is probably related to:

- low instructor pay which is correlated to high turn-over rates and low levels of instructor training;
- minimal on-the-job training for instructors; and
- the lack of connection between learner improvement and program funding.

Policy options for improving instructor and program quality include:

- Developing incentives for learner improvement. These could include merit bonuses for programs with high demonstrated learner improvement and evidence of significant learner improvement as one criteria for refunding programs;
- Increasing funding availability to programs who hire full time reading and basic skills specialists;

- Require that 2-3 percent of program budget proposals be allocated to state approved inservice training of instructors.

A portion of this could be provided at the state level as part of coordinated efforts for instructor improvement.

These incentives could be accomplished by adding 10 percent to program funding to be used for incentive bonuses. If no additional funding is available, base-line program funding could be reduced by 10 percent with the remaining funds allocated on the basis of merit and competitive instructor training proposals.

NOTES

1. The percentage of learners taking English as Second Language classes is probably considerably lower nationally. Urban areas, Florida, and the Southwest United States do considerably more English as Second language teaching than does the rest of the nation.

2. Though Keefe and Meyer did not test extensively for other learning disabilities, anecdotal information from instructors is suggests that the considerable number of children in schools with learning disabilities do not disappear as adults. In a workplace literacy study performed by this author (Mikulecky & Strange, 1986), the learning of more than 20% of workers in an in-plant remedial program was inhibited by side-effects from persistently prescribed medication or perceptual and long-term memory problems.

3. Oral reports from Dr. Anabel Newman and from the national literacy Contact center suggest that advertising's impact on learner recruitment may be increasing. No published data illuminate this point. As stated earlier, the Literacy Volunteers of America do report approximately 3 percent more tutors than learners (Wright, 1988).

4. The employer reporting 20 percent of hourly workers reading and computing below an eighth grade level hired few workers without high school diplomas. The most recent National Assessment of Educational Progress for adult literacy (Kirsch & Jungeblut, 1986) indicates that approximately 20 percent of all young adults read below an eighth grade level. It is likely that industries having higher percentages of hourly workers who are dropouts will have higher percentages reading below the cut-off point for extended technical training.

5. Given the severe learning problems of many low literate adults, it is highly likely that some adults will never be capable of using a computer manual to trouble shoot production problems.

6. Research does not document why learning with workplace materials is more effective. The most likely probabilities are that transfer, continued practice, and higher motivation are all much more possible when one learns with material one is likely to encounter daily.

7. The level of indirect support ranges from 90 percent of Adult Basic Education funding to 8 percent of JTPA funds which are to be allocated for remedial education of the unemployed. Funds are administered by a variety of agencies including state governments, Private Industry Councils, school systems, and private contractors.

8. The directions for these programs are discussed in some detail in Chisman (1989). For JTPA they include support of large scale demonstration to enhance workplace literacy and extending the reach of

present programs. For the Carl D. Perkins Vocational Education Act new directions include closer links between employer demands and the basic skill levels attained by students in funded programs. New directions for the Adult Education Act include enhancing state-wide coordination of basic skills programs, increasing quality and accountability levels, bringing education provisions from the expiring Immigration reform legislation into the Adult Education system, and relieving overwhelmed Adult Basic Education programs of responsibility for English as Second Language students.

REFERENCES

Balmuth, M. (1988). Recruitment and retention in adult basic education: What does the research say? *Journal of Reading*, *31*, 620-623.

Bowker, R. R. (1987). Adult literacy programs: Services, persons served, and volunteers. In *Bowker annual of library and book trade information*. New York: R. R. Bowker, Inc., 397-403.

Bear, D. R. (1987). *Project TACL: A team approach to community literacy*. Reno, Nevada: Nevada University, Reno, College of Education.

Berlin, G. & Sum, A. (1988) *Toward a more perfect union: basic skills, poor families, and our economic future*. New York: Ford Foundation.

Brizius, J. & Foster, S. (1987). *Enhancing adult literacy: A policy guide*. Washington, D.C.: Council of State Policy and Planning Agencies.

Business Council for Effective Literacy. (1987). *Job-related basic skills: A guide for planners of employee programs*. New York: Author.

Calamai, P. (1987). *Broken words: Why five million Canadians are illiterate*. Toronto, Ontario: Southam Newspaper Group.

Canadian Business Task Force on Literacy. (1988). *Measuring the costs of illiteracy in Canada*. Toronto, Ontario: Author.

Carbone, G. J. (1987). *The 1986 literacy tutor coordination program: A report to the legislature pursuant to chapter 312 laws in 1986*. Olympia, Washington: Washington Office of the State Superintendent of Public Instruction.

Chall, J. S., Heron, E. & Hilferty, A. (1987) Adult literacy: New and enduring problems. Phi Delta Kappan, 69, 190-196.

Chisman, F. P. (1989). Jump start: the federal role in adult literacy. Southport, Connecticut: The Southport Institute.

Committee reports on reading services offered by businesses. (1989) Reading Today (a bi-monthly newspaper of the International Reading Association, Newark, Delaware), 6, no. 5, p.4.

Congress of the United States. (1987). An assessment of the federal initiative in the area of adult literacy. Staff report of the subcommittee on elementary, secondary, and vocational education of the committee on education and labor, U.S. House of Representatives, one-hundredth Congress. Washington, D. C.: House Committee on Education and Labor, (ED286072).

Cook, J. (1986). Final report: New York City adult literacy initiative. New York: Literacy Assistance Center.

Cornell, T. (1988). Characteristics of effective occupational literacy programs. Journal of Reading, 31, 654-657.

Darkenwald, G. & Valentine T. (1985) Outcomes of participation in adult basic skills education. Lifelong Learning, 8, 17-22.

Darling, S. (1984). Illiteracy: an everyday problem for millions. Appalachia, 18, 21-28.

Delker, P. V. (1984). Ensuring Effective Adult Literacy Policies and Procedures at the Federal and State Levels. Washington, D. C.: Office of Vocational and Adult Education (ED260281).

Denny, V. H. (1988). Analysis of New York City's 1986-87 data base. A paper presented at the National Reading Conference, Tucson, AZ, December, 1988.

Developmental Associates. (1980). An assessment of the state administered program of the adult education act. Final report. Arlington, VA: Developmental Associates.

Diekhoff, G. M. (1988). An appraisal of adult literacy programs: Reading between the lines. Journal of Reading, 31, 624-630.

Diekhoff, G. M. & Diekhoff, K. B. (1984). The adult literacy program attrition problem: identification at intake. Adult Literacy and Basic Education, 8, 34-47.

Drew, R. A. & Mikulecky, L. J. (1988). How to gather and develop job specific literacy materials for basic skills instruction. Bloomington, IN: The Office of Education and Training Resources, School of Education, Indiana University.

Duffy, T.M. (1985). Literacy instruction in the military. Armed Forces and Society, 11, 437-467.

Fingeret, A. (1983). Social network: A new perspective on independence and illiterate adults. Adult Education Quarterly, 33, 133-46.

Fowler, F. J. (1986). Survey of literacy resources: A report of methods and basic estimates. Boston: Center for Survey Research, University of Massachusetts.

Gaul, P. (1987). Evaluation of the effectiveness of work study students in extension and expansion of literacy services in Delaware County, Chester, PA. Harrisburg, PA: Pennsylvania State Department of Education (ED266273).

Harman, D. (1985). Turning Literacy Around: An Agenda for National Action. New York: Business Council for Effective Literacy.

Henry, J. F. & Raymond, S. (1982). Basic skills in the U.S. workforce. New York: Center for Public Resources.

Hymowitz, L. (1981). Employers take over where school failed to teach the basics. Wall Street Journal., Jan. 22, 1981, p. 1.

Illinois Community College Board. (1987). Fiscal year 1987 disadvantaged student grant report. Springfield, ILL.

Johnston, W. B. & Packer, A. E. (1987). Workforce 2000. Indianapolis, Indiana: Hudson Institute.

Jones, P. C. (1988). The good news about illiteracy. Toronto, Ontario: Business Task Force On Literacy.

Keefe, D. & Meyer, V. (1988). Profiles of and instructional strategies for adult disabled readers. Journal of Reading, 31, 614-619.

Kirsch, I. & Jungeblut, A. (1986). Literacy profiles of America's young adults. Princeton, New Jersey: National Assessment of Educational Progress at Educational Testing Service.

Kozol, J. (1985). Illiterate America. New Jersey: Anchor Press.

Lane, M. A. (1984). California literacy campaign program effectiveness review. Sacramento, CA: California State Library (ED263917)

Lusterman, S. (1977). Education in Industry. New York: Conference Board.

Mikulecky, L. (1982). Job Literacy: The relationship between school preparation and workplace actuality. Reading Research Quarterly, 17, 400-419.

Mikulecky, L. (1985). Literacy task analysis: Defining and measuring occupational literacy demands. A paper presented at the annual meeting of the American Educational Research Association, Chicago, IL, March 31, 1985, (ED262206).

Mikulecky, L. (1987). The status of literacy in our society. In J. Readance & S. Baldwin (Eds.), Research in literacy: Merging perspectives (pp. 211-235). New York: National Reading Conference, 36th Yearbook.

Mikulecky, L. (1988). Indiana Workplace Literacy Partnership. An unfunded proposal to the U.S. Department of Education, Washington, D. C.

Mikulecky, L. & Strange, R. (1986). Effective literacy training programs for adults in business and municipal employment. In J. Orasanu (Ed.) A decade of reading research: Implications for Practice. New Jersey: Lawrence Erlbaum Associates.

New York State Education Department. (1987). Adult literacy education program, New York State participant data for 1985-1986. Albany, New York: New York State Education Department, Division of Adult and Continuing Education (ED2860004).

Pasch, M. & Oakley, N. (1985). An evaluation study of project LEARN. Students and tutors 1982-1984. Paper presented at the 69th Annual Meeting of the American Educational Research Association, Chicago, Illinois.

Pennsylvania Association for Adult Continuing Education. (1981). Adult basic education and the welfare roles: an economic and social alternative. Harrisburg, PA (ED226106).

Pennsylvania Department of Education (1986). Adult basic education programs in the commonwealth of Pennsylvania. Harrisburg, Pennsylvania: Pennsylvania State Department of Education, Division of Adult Basic Education.

Pugsley, R. S. (1987). National Data Update. A presentation at the Annual Conference, State Directors of Adult Education, Washington, D.C., July 21, 1987.

Rogers, J. J. (1984). Maintaining volunteer participation in adult literacy programs. Lifelong Learning, 9, 22-24.

Rush, T., Moe, A. & Storlie, R. (1986). Occupational literacy. Newark, Delaware: International Reading Association.

Skagen, A. (Ed.) (1986). Workplace literacy. New York: AMA Membership Publications Division.

Sparks, R. (1989) Workplace literacy. A paper presented at Functional literacy: Conceptions and misconceptions of competence. University of Toronto, Toronto, Ontario, May 24, 1989.

Sticht, T. G. (1982). Basic skills for defense. Alexandria, VA: Human Resources Research Organization.

Stitch, T. G. (1987). Functional context education. California: Applied Behavioral and Cognitive Sciences, Inc.

Turner, T. (1988). Using the computer for adult literacy instruction. Journal of Reading, 31(7), 643-647.

U.S. Departments of Education and Labor. (1988). The bottom line: basic skills in the workplace. Washington, D.C.: Office of Public Information, Employment and Training Administration, Department of Labor.

Valentine, T. (1986). Issues central to the definition of adult functional literacy. (Contract No. OERI-P-86-3014). Unpublished manuscript presented to the U.S. Department of Education.

Vorst, J. (1988). Lafayette Adult Reading Academy Newsletter. Lafayette, IN: Lafayette Adult Reading Academy, Fall, 1988.

Wheat, T., Lindberg, M. & Nauman, M. (1977). An exploratory investigation of newspaper readability. Illinois Reading Council Journal, 5, 4-7.

Woods Gordon. (1988). Evaluation of literacy and basic skills initiatives. Toronto, Ontario: Ministry of Skills Development.

Wright, K. D. (January, 1989). Literacy volunteers of America. Update: A national newsletter for the adult literacy and the adult learning community. Washington, D.C.: U.S. Department of Education.

Young, D. & Irwin, M. (1988). Integrating computers into adult literacy programs. Journal of Reading, 31(7), 648-653.

6. THE FIRM'S DECISION TO TRAIN

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I. Introduction

Job training is a fundamental part of the total educational system in any industrialized economy, and the efficient provision of such training an important element in any comprehensive industrial strategy. In his classic study of on-the-job training, Jacob Mincer concluded a careful assessment of the aggregate importance of on-the-job training with the remark, "it is probably correct to say that, in the male half of the world, on-the-job training -- measured in dollar costs -- is as important as formal schooling" (1962, p.63). This research report provides a critical review of economic models of the firm's decision to train workers: what training is undertaken, where it is undertaken, and who finances it. In the final section, I consider ways in which the government can encourage the more efficient provision of on-the-job training.

Many critical job skills, e.g. reading and mathematical skills, are not typically learned "on the job", but are developed in a formal schooling environment. Presumably these attributes are almost universally demanded, so that economies of scale argue for collective provision. Many of these skills also have returns beyond any direct labor market returns, for example an informed electorate, and are collectively provided (subsidized) for that reason as well. The efficiency of the schooling system in providing these skills is often questioned, but only modest variations or reform have been proposed, suggesting that the basic structure (publicly financed, specialized training centers) is perceived as reasonable.

Skills more directly linked to the job are more eclectically supplied, reflecting perhaps the diversity of the skills required. Some job skills are learned in formal job training programs, either on-site or in specialized centers not unlike public schools, while others are the informal outcome of work activity (learning-by-doing). Imposing some sort of logical structure on these disparate activities has been an important contribution of economic analysis.

In the final analysis training is an investment decision. The training process absorbs the worker's time as well as the time of co-workers and supervisors, various materials, and the indirect costs of mistakes made by the inexperienced worker. If the training is to be economically rational, these costs must be offset by the higher future productivity of the trained worker. Because these returns (and costs) are distributed over time, the financial aspects of the transactions are important as well. The financing of intensive on-the-job training activities is a serious obstacle to the efficient provision of a highly trained work force.

The distinction between the **training activity** itself and the **financing** of the training activity is an important one. The form of the training activity is in the first instance technological. What is the nature of the on-the-job learning mechanism? In what environment is the learning of job skills most cheaply provided: in the firm or in some specialized training program, e.g. schools? The financing issue is fundamentally one of access to capital, and is intimately related to the structure of the property rights system. The financing decision depends in an important way on the legal environment in which firm and worker exchange goods and services as well as promises of future exchanges. As in many economic decisions, the action decision (training) and the financing decision (who pays for the training) are intimately related.

The focus of this review is on the provision of job training to workers with no unusual training problems. The provision of job training programs to seriously disadvantaged individuals is itself a major policy issue, possibly justifying extensive direct government intervention, but the direct government supply of trained (disadvantaged) workers is not a significant portion of the total supply of job skills in the economy. Job training in the United States has been overwhelmingly private, forged in a variety of ways among workers, firms, and unions. It is this market that is examined below.

The review proceeds in the following way. I first consider the nature of on-the-job training more precisely, emphasizing the role of the firm in the supply of on-the-job training opportunities. Two alternative models of on-the-job training are considered and a few implications for the efficient supply of training services are derived. In Section III I develop the basic investment model of on-the-job training, the analytical structure that will be used to frame the discussions to follow. The economic logic of this human capital paradigm is discussed at length because of its central role in forming the economist's conception of this market. In Section IV conditions under which the free market will generate the efficient amount of on-the-job training are outlined. The discussion then proceeds to the important issue of why this market may fail to yield efficient results, most prominently the financing problem. The relationship of human capital finance to the deeper issue of property rights structures is explored: the right of contract has been socially abridged for a variety of reasons, both by design (bankruptcy laws) and by the inadvertant decisions of judges and juries. Analyses of variations on this fundamental problem comprise much of the remainder of this review, including the policy discussion of the final section. The potential for an alternative supply mechanism, employer training cooperatives, is critically examined.

II. The Firm As Supplier of Training Opportunities

The distinction between schooling and on-the-job training is not always a clear one. The issue is more than one of vocational versus academic skills. Vocational skills that are obvious candidates for on-the-job training, e.g. carpentry, are often taught in public schools or in specialized training centers. In that sense on-the-job training must be considered as part of a broader eductional structure, with the observed mix of formal schooling and on-the-job training an equilibrium outcome. Neither is the issue simply one of the geographic locus of training. During the English industrial revolution, firms often provided traditional schooling activities to young workers, much as Hollywood provides tutors to young actors today and for the same reason, the convenient integration of work schedules and legal requirements for schooling. This is not what is normally implied by on-the-job training, which includes the notion of a paid or "on-the-clock" activity. In this review on-the-job training refers to any activity undertaken on the job (during work hours) that increases the worker's subsequent productivity.

Given the diffuse nature of this definition, the physical training activity is difficult to conceptualize neatly. The standard investment model of on-the-job training, discussed at greater length in the next section, is simply an extension of a schooling model into a period of incomplete specialization in education, Mincer (1962, 1974); Ben-Porath (1967); Heckman (1976); Rosen (1976); and Haley (1976). Individuals who wish to undertake a human capital investment program that involves less than complete time specialization in schooling are presumed to choose on-the-job training. Why such activities should be undertaken during "paid" hours is not obvious.

The implications of this view for the optimal geographic locus of training activities are few: the part-time "schooling" could be carried on in schools or in the firm. The usual balance between economies of scale (in training) and commuting costs would presumably affect the outcome. For example, one could imagine that, if a large number of individuals in the same work place wanted to undertake the same course of study at the same time, transportation economies would lead to the activity being undertaken at the work place. If the labor market is competitive, one could also imagine that the training activity would be provided efficiently, with various inputs, including the individual's own time and assorted other inputs, combined in a rational fashion. The incomplete specialization model is in many ways like the Hollywood tutoring model; the training may occur at the work place, but does not capture much of the interaction of work activity and learning that is commonly associated with the notion of on-the-job training.

An intuitively plausible alternative model of the learning process is the learning-by-doing or learning-as-a-byproduct model. Evidence from the NLSY reveals that on-the-job learning is intimately related to what the individual does on the job, that is on his or her occupation, Parsons (1985). Among male youth in 1982 who had jobs and were not enrolled in school, approximately two-thirds of all professionals, managers, and craftsmen reported that their jobs had high learning content. In contrast, only one-third of laborers and service workers and only 25 percent of farm laborers reported that their jobs had high learning content. This suggests that much on-the-job learning is the by-product of work activities and not simply incomplete specialization in schooling.

The learning-by-doing model emphasizes the importance of the underlying work activity and also the notion of learning rather than training. In this vein, Rosen (1972) has stressed the unique supply characteristics of training in the work place. Specifically, Rosen proposes that individuals be viewed as choosing among jobs based on a compensation bundle that includes both current wages and on-the-job training, which itself is determined by the technological characteristics of the job and on the firm's efficiency at providing such training. The interaction of these individual and employer choices yields the equilibrium level of on-the-job learning in the economy as well as the rate of return to the activity.

In many circumstances the distinction between these two training activity models is not an important one. In other circumstances, however, the differences may be pronounced. A key difference in the models is the implied degree of flexibility in the provision of learning opportunities. If firms are simply schools within the plant, the opportunities for on-the-job training should respond flexibly to shifts in worker demand. Conversely if such learning is primarily a by-product of work activities, then the firm may have much less flexibility in varying learning activities.

For example, as a by-product of work activity, the aggregate supply of on-the-job learning opportunities will be positively linked to the business cycle through new hires, etc. On-the-job learning will increase more or less in proportion to the expansion and contraction of employment opportunities. Conversely formal schooling tends to be mildly countercyclical; when current business conditions are difficult, individuals are more likely to remain in school. If on-the-job training is, in fact, well characterized by an incomplete-specialization-in-schooling model, then one might expect to see a similar expansion of the training component of work when product demand contracts: the learning content of jobs should increase.

The focus on the supply characteristics of the training activity raises other issues as well. Specialization in the training function may occur across firms and industrial sectors; on-the-job training need not be conducted in the firm at which the worker is trained, Cho (1983). If the process involves explicit, controllable training programs, specialization will only occur if the training function is characterized by increasing returns. If on-the-job training is largely learning-by-doing, however, the learning accumulated by a firm's employees at one point in time may bear no systematic relationship to the amount demanded subsequently. An individual may find that he cannot use his newly acquired skills profitably in the current firm. In this case, learning may induce mobility.

Evidence for such specialization is reported by several investigators. Schiller (1986), for example, provides evidence that learning among new entrants to the labor force occurs disproportionately in small firms. These firms on net lose experienced workers to larger firms. Weiss (1985) attempts to resolve theory and evidence that 1) union workers are better trained than nonunion workers, but that 2) union workers are less likely to receive training (Mincer (1983)), by arguing that experienced, nonunion workers disproportionately migrate to unionized firms. I argue below (although this is no more than a conjecture) that the training provided in small firms is disproportionately rudimentary job skills, especially work discipline and cooperation, and that intensive on-the-job training is primarily carried on in large firms, principally because of the ease of internal financing.

On the production side, on-the-job training can be viewed as simply another product of the firm. To the extent the final product market activities are efficiently organized, one could assume that the time of worker, supervisor, and co-workers and the related direct costs devoted to the training will in general be in efficient proportions and combined rationally into a final trained product. One unique problem that arises in the provision of training is obtaining the cooperation of co-workers, Reagan (1988). The heart of the cooperation problem is that workers are being asked to train their own potential replacements. This is not a serious problem if the market is large and the trainers are specialists, but may be serious in internal labor markets in which the trainers are co-workers. The problem is an ancient one. Noncompetitive provisions were an important part of early apprenticeship contracts; the apprentice's right to compete with the master was often limited, e.g. he could not establish a shop within a fixed range of the master's own shop. If the employees doing the training are closely monitored, this type of malfeasance may be limited. If the training personnel have a great deal of discretion, however, as would be the case in less formal training programs, the problem may be an important one.

Reagan (1988) has argued that seniority rules on lay offs and promotions are in part an institutional way of reducing this obvious conflict of interest. I assume below that these institutional rules are in fact sufficient to enable the firm to produce the training activity efficiently, given the amount of training that is to be undertaken. In the next several sections I develop more carefully the issue of the efficient amount of on-the-job training. The training specialization issue is considered again in Section VII, when the implications for training of the recent restructuring of the industrial base in the United States are derived.

III. On-the-Job Training: An Investment Perspective

Economists view the on-the-job training decision as one of a broad class of human capital investment decisions, Jacob Mincer (1962, 1974). The heart of the decision calculus is as simple as it is powerful. The training activity typically involves a period in which the worker is not as productive as he might otherwise be. The training activity may involve other costs as well, including the diversion of supervisor and co-worker time and energies to the training process, purchased training materials, and unusually high scrappage rates (or lost business opportunities at the management trainee level) due to a high incidence of mistakes. Set against these costs is the increase in worker productivity after the training period.

It will be useful to formalize the investment decision. Denote the worker's productivity flow in the absence of training as v_t, which when discounted at the interest rate r, promises lifetime wealth (W) of:

$$W \text{ (No Training)} = \int_0^\infty v_t e^{-rt} dt. \tag{1}$$

If productivity is fixed forever at a level v, that is $v_t = v$, for all t, the wealth formula takes on the simple form:

$$W \text{ (No Training)} = v/r. \tag{2}$$

Productivity is likely to decline at some point and indeed fall to zero at death or retirement, but the constant productivity assumption underlying Equation (2) may still be a useful approximation, especially if retirement is many years in the future, or the interest rate is high.

The training alternative also involves a time flow of productivity, say v_t^*, and may include some direct costs of training at each instant, say d_t. The lifetime wealth implied by the training alternative is:

$$W\ (\text{Training}) = \int_0^\infty (v_t^* - d_t)\, e^{-rt}\, dt. \tag{3}$$

If for example the training period is of duration T, during which the worker's productivity is v_0^* and direct training costs are d, and after which the worker's productivity is v_1^*, the worker's lifetime wealth in the training regime is:

$$W\ (\text{Training}) = (1/r)\,[(v_0^*-d)\,(1-e^{-rT}) + v_1^*\, e^{-rT}], \tag{4}$$

where T denotes the end of the training period.

The efficiency criterion is a simple one: the training activity should be undertaken if and only if the worker's productive wealth in the training regime equals or exceeds his or her productive wealth if untrained, where all wealth computations are undertaken at the social discount rate, say ρ. Formally this means that training is economically efficient if and only if:

$$W\ (\text{Training}|r=\rho) \geq W\ (\text{No Training}|r=\rho), \tag{5}$$

or in the special case represented by Equations (2) and (4):

$$(1/\rho)\,[(v_0^*-d\ -v)\,(1-e^{-\rho T}) + (v_1^*-v)\, e^{-\rho T}] \geq 0. \tag{6}$$

In the typical case in which $v_0^* < v$, and $d > 0$, the post-training productivity v_1^* must exceed the untrained productivity by an amount sufficient to cover the foregone earnings $(v-v_0^*)$ and the direct training costs during the training period T:

$$v_1^* \geq v + (v\ -v_0^* + d)\,(e^{\rho T} -1). \tag{7}$$

An Example. A simple example illustrates the sensitivity of the efficient training decision to the interest rate when the training period is lengthy. Consider a worker whose productivity before training is $15,000 per year, who is able to acquire an additional skill in three years, but only if his current productivity is reduced say by one-third during the training period, to $10,000 per year (assume also that direct costs, materials, etc. are negligible, $d=0$):

v = $15,000 per year;

v_0^* = $10,000 per year; and

T = 3.

At a social discount rate of 10 percent, the additional training would be socially efficient only if the worker's post-training productivity (v_1^*) was $16,749 per year. At a social discount rate of 20 percent, the training would be socially efficient only if the worker's post-training productivity was $19,111 per year. The set of efficient training oportunities is likely to be seriously reduced in the high interest rate regime.

IV. Training Efficiency and the Free Market

The question naturally arises, what institutional structure, if any, will generate the efficient job training outcome. Economic experience suggests that free markets will induce efficient behavior over a broad range of environments; economic theory demonstrates that they will do so in more narrowly restricted circumstances. In the current situation, a free labor market composed of wealth maximizing individuals should be efficient if:

i) the worker has access to capital at the social discount rate;
ii) a large number of firms demand the skills developed; and
iii) job changing is costless.

In such a world, the worker would receive at each instant a wage equal to his or her net productivity; assuming that the firm provides all training materials, the competitive wage at each instant t should be:

$$w_t = \begin{cases} v_t & \text{if no training;} \\ v_t^* - d_t & \text{if training.} \end{cases} \qquad (8)$$

This market outcome has strong efficiency implications. The wealth maximizing worker facing this wage structure would train when training is efficient, and would not train when training is inefficient. If the direct training costs are paid directly by the worker, the wage in the training alternative would not include an implicit charge for this material; the conclusion that the individual would choose efficiently among the alternatives is unchanged.

A model of this sort has provided the basis for a highly successful model of life cycle wages in the post-schooling period. The pioneering work in this area, especially Mincer (1962, 1974), is based on this theoretical linkage between training and wage growth in a competitive spot market for labor services: in such a market, learning on-the-job leaves predictable patterns in the wage/experience profiles of young workers. The optimal time path of life cycle learning and earnings was first formally derived within a simple structural environment by Ben-Porath, and was extended and empirically implemented by Haley (1976), Heckman (1976), Rosen (1976), and others (see Weiss (1986) for a review of this literature). Empirical implementation of these models requires strong assumptions on a variety of environmental and technological conditions. As a consequence the simple log earnings function approximation to this process remains a standard estimating tool. For an excellent critical review of the standard model, see Hanushek and Quigley (1985).

Becker (1975) used a simple investment model to assess the efficiency of the provision of college educations in the United States, In particular he found that the after-tax rate of return on a college education was comparable to that on physical capital, a strong indication of efficiency in the college market. Unfortunately the same analysis cannot be used to assess similarly the aggregate efficiency of the market for on-the-job training. To understand why, it is necessary to sketch out briefly the standard wage model. In the standard log wage function, "t" years following school departure, the log wage can be represented by the approximation (ignoring individual subscripts):

$$\mathrm{Log}(w_t) \quad = \quad \mathrm{Log}(w_0) + rH_t - \Delta H_t + \varepsilon_t, \tag{9}$$

where w is the observed wage rate, H is the stock of accumulated on-the-job learning capital, ΔH is the current period addition to that stock (current learning activity), and ε is a random element. The initial post-schooling wage $\mathrm{Log}(w_0)$ is assumed to be a linear function of a variety of attributes:

$$\mathrm{Log}(w_0) \quad = \quad X\beta, \tag{10}$$

where X is a vector of personal productivity attributes, such as schooling, intelligence, etc. With all variables directly observable, the coefficents as well as their standard errors can be estimated efficiently using ordinary least squares techniques under common assumptions on the error term ε (iid normal). Of special interest here the coefficient (r) on the stock of human capital variable (H) can be interpreted as a rate of return on on-the-job training.

Unfortunately the stock of on-the-job training is not directly observable. Instead the model is normally implemented by assuming a simple investment pattern. In particular, assume that:

$$H_t \equiv \sum_{i=0}^{t-1} \Delta H_i = \sum_{i=0}^{t-1} \lambda_i k_i \qquad (11)$$

where λ_i is a dummy equal to one if the individual has a job in period i, zero otherwise, and k_i is the share of total human capital in period i devoted to learning activities. The standard treatment for male earnings is to impose the assumption that $\lambda_i=1$ for all i and that on-the-job investment shares decrease at a linear rate with job market experience:

$$k_i = \kappa_0 + \kappa_1 E_i, \qquad 0 < \kappa_0 < 1; \quad \kappa_1 \leq 0 \qquad (12)$$

where $E_i = i$ in this model. This investment structure induces a log wage model with experience and experience squared terms, at least over the range of value for which k_i is feasible (positive):

$$H_i = \kappa_0 E_i + (\kappa_1/2)(E_i)^2. \qquad (13)$$

In many applications, a second level of empirical approximation is required since work experience itself is not available in the data set. In particular, a common assumption is that work experience is age minus schooling minus six. In almost all empirical applications of this model in which the sample age intervals are sufficiently broad to permit precise estimation, log wage is estimated to be a positive, concave function of experience. Unfortunately the rate of return on on-the-job is not identified in this structure; it can only be jointly estimated with the share of training time parameters κ_i .

More direct measures of on-the-job learning permit a more persausive test of the on-the-job training hypothesis, but also fail to identify the critical rate of return to training parameter. In Parsons (1985), for example, an on-the-job learning variable is constructed from a question designed to elicit the respondent's self-perception of learning activities. The instrument had four categories of response, indexed by L_j, j=1,2,3,4, with 4 denoting the highest learning condition. This instrument provides an alternative, *direct* measure of human capital investment and stock under competitive assumptions,

$$\Delta H_i = \sum_{j=1}^{4} \alpha_j L_{ji}, \tag{14}$$

and

$$H_i = \sum_{i=0}^{t-1} \sum_{j=1}^{4} \alpha_j L_{ji}. \tag{15}$$

Presumably $0 < \alpha_1 < \alpha_2 < \alpha_3 < \alpha_4$ if the self-assessment measures are valid. Since the "no job" status is the base category, the empirical equivalence of the learning content of "no job" and of a "no learning" job can be tested as the hypothesis that $\alpha_1 = 0$. Estimates of such a model are consistent with the basic on-the-job hypothesis, Parsons (1985), but the rate of return measure is again not identified, being jointly estimated with α_i. The fact that the on-the-job-training hypothesis is broadly consistent with the observed pattern of post-schooling wages does *not* imply that this training is efficiently provided, but rather that the market for on-the-job training is not fundamentally perverse.

Institutional features of the United States labor market raise the possibility that the market mechanism set out in Equation (8) may not be feasible. The competitive labor market model suggests that "equalizing or compensating differentials" should exist, so that individuals in high learning jobs (with the prospect of higher future wages) will receive lower current wages, much as individuals in formal schooling must forego current income. A variety of plausible institutional forces, however, may support wage rates above competitive levels, most obviously a legal wage minimum. A number of studies report evidence that on-the-job training is restricted by effective minimum wages, Fleisher (1981), Leighton and Mincer (1981), and Hashimoto (1982). Social forces may also limit the ability of workers to pay for job training through wage deductions during the training period. Lazear (1979), for example, has recently argued that affirmative action pressures have had perverse effects on the provision of on-the-job training activities to black youth. In particular he argues that average current wages are the most visible indicator of discrimination, so that employers have an incentive to shift black workers systematically into low-learning/high-current-wage jobs (under the standard equalizing differential argument). The logic of the argument depends on the specific observability assumption: that affirmative action enforcers observe wages and not learning activities. This empirical assumption is not plausible for formal training programs. It seems unlikely that an employer under affirmative action pressures would restrict entry by blacks into training programs. The insight may be valid, however, for more informal learning-by-doing activities for which no statistics or measurements are available.

Work by Barron, Black, and Loewenstein (1985), based on employer reports of training activity, and by Parsons (1985), based on self-reporting of on-the-job learning activity by workers, both suggest that compensating differentials are not significant. The Barron, Black, and Loewenstein data contained only modest individual quality controls, and they attribute the absence of an observed compensating differential to unmeasured quality characteristics of trainees. The phenomenon is also observed in the Parsons study, however, which includes much richer individual controls, including the extensive aptitude and achievement information in the Armed Services Vocational Aptitude Battery.

In any case it is theoretically possible for the firm to work around the minimum wage constraint by having the worker enter explicitly into a financial transaction (an explicit loan) that breaks the link between current wages and current training. Full payment of wages and a corresponding bill for the training, appropriately financed, should provided an equivalent solution to the investment problem. In the next section we shall see why this is not done.

V. The Financing Problem

Prominent among the sufficient conditions for the free market in on-the-job training to be efficient is the requirement that workers have access to capital at the social rate of discount. One would suspect that this condition does not hold empirically, even approximately. Workers undertaking substantial job training investments are often young, with only insignificant capital holdings. Even among older workers, a substantial fraction of those considering substantial human capital investments are displaced workers, many of whom have similar financial difficulties.

If the training investment is a significant one, the financing problem may substantially increase the costs of undertaking the activity. Consider again the example developed above (Section III): a worker whose productivity before training is $15,000 per year is able to acquire an additional skill in three years, but only if his current productivity is reduced by one-third during the training period, to $10,000 per year. A worker who must borrow at a rate of 20 percent to make up the three year shortfall in income of $5000 per year will require post-training income of $19,111 per year to undertake the investment. If the firm's effective interest rate is 10 percent, the capital cost of the trained worker is 11.7 percent higher if the worker is required to finance the investment than if the firm can directly finance the investment, implicitly lending the worker $5000 per year for the three year investment period (by paying him or her the full wage of $15,000 per year), and then capturing the return by continuing to pay the worker $15,000 in the post-training period.

The incentive for the employer to supply the worker with the needed funds in some form is evident. In this section I first explore the nature of the borrowing problem that limits the worker's access to funds in general and then explain why the firm has a unique role as provider of the resources required to finance the training.

A. The Worker's Ability to Borrow: The Property Rights Issue

Obviously limitations on worker credit is a serious problem if the worker is expected to finance a major investment activity. The amount of training activity will be less than the efficient level and the more limited supply of trained workers will translate into higher costs to the firm of trained workers. To consider solutions to the problem, it is necessary to understand more completely the nature of the borrowing difficulty; a property rights perspective will be useful.

Consider a world of certainty with completely enforceable contracts, so that an individual who commits to a specified payment scheme is not able to avoid these payments. The financing of the training program in this environment is unlikely to be a problem; the least cost provider would supply the funds, whether that provider is the worker, the firm, or a financial intermediary, and ceteris paribus the training would be supported at least cost.

Two important processes arise that make financial contracts of this type incompletely enforced -- default and bankruptcy. An individual who dies with debts exceeding assets does, in a sense, take it with him, his creditors are out of luck. Less drastic means of avoiding repayment also exist. If the debt is sufficently small or the costs of collection sufficiently high, then the creditor may write off a specific debt. Bankruptcy introduces social values into the debt collection mechanism. If the individuals debts exceed his or her assets, he or she may from time to time declare bankruptcy, distribute the assets proportionately among the creditors, and return to a zero net asset position. A special problem with human capital investments is that the resulting capital is not viewed as an asset in this computation; such investments do not create their own collateral, they are an invitation to bankruptcy.

To illustrate the importance of the financing aspect, consider an historical example that illustrates the basic principles of the problem in an extreme way, the practice of indentured servants. In the Colonial period land and natural resources were abundant in the United States, but labor shortages were severe. A basic problem was the high cost of transportation from areas of relative labor surplus, the Old World, to areas of labor shortage, the New. The cost of passage in the early seventeenth century was almost one and one half times the income per person in a laboring family, Galenson (1981, p.230). Equally important was the financing. The individuals most likely to find migration to the New World economically attractive were those in the most unfavorable economic conditions, a group unlikely to have significant capital holdings to finance the cost of passage.

An institutional response to this problem was the development of the practice of indentured servants. Individuals could purchase passage to the Colonies by promising to work for a master for a fixed period of time, typically for four years or more, depending on skill and other personal characteristics. Indentured servants were a major source of labor in the colonial period; Galenson cites two accounts that claim that one half to three quarters of the immigrants to the Colonies in the seventeenth century were indentured servants (pp.3-4). Over time slave labor came to dominate this market, but for an extended period of time this alternative, the long term commitment of labor services, was the dominant institution for handling the problem of financing migration.

More than a simple labor contract was involved. "...indentured servitude did involve a stricter obligation than most forms of labor contract because the system provided for the enforcement of the agreement by requirement of specific performance of the work described in the contract", Galenson (1981, p.3). Commercial law developed around indentured servants contracts: they could be, and were, freely bought and sold for the duration of their indenture periods. The control problem with indentured servants was a serious one. Such contracts could not permit bankruptcy: few of these individuals had significant physical assets upon arrival to set against their transportation debt. The problem was deeper: the new arrivals had to be secured to their place of employment and motivated to work for another without the usual free market incentives. In this resource-abundant society, runaways were a special problem. To assist in the enforcement of this type of contract, colonists were required to carry internal passports.

A modern and somewhat less exotic example is the government's funding of training of military officers, most prominently in military academies. These institutions provide an expensive college education at no cost to those selected to participate. Indeed the various armed services pay attendees a substantial wage during the training period. At the end of the training period, attendees are very much in debt to the government. Payment again is by specific performance, the individual is required to serve a minimum length of time with the "firm", in this case one of the military services. The individual can also be funded to attend professional school, with an additional number of years added to his or her service requirement. The commitment is not subject to personal bankruptcy.

Both examples, the historical and the modern, illustrate i) the basic problem of financing an expensive training activity, ii) the institutional responses to the problem -- contracts with specific performance requirements, and iii) the difficulties that the responses themselves generate -- any long term contract involves some limitation on the individual's freedom. Private employers today do not have the specific performance option. Nonetheless they have a unique role in providing personal financing to workers with modest capital. The nature of the lending mechanism and its limitations are developed in the next subsection.

B. The Unique Role of the Firm

The problem of funding human capital investments with third party loans is a serious one. Of particular importance here, the employer has an alternative debt repayment mechanism, one that provides for repayment despite the bankruptcy constraint, namely job mobility costs. If mobility costs are high, the employer can invest in the worker, knowing that the worker cannot strategically respond by leaving the firm. The bankruptcy problem is preempted; the individual cannot go to court and have the debt erased. Mobility costs are an essential element in a variety of long term implicit contracts, for example, if the firm supplies productivity insurance, either across the business cycle or across the life cycle. The firm cannot pay above average wages when conditions are adverse, without paying below average wages when times are good, an arrangement that is only possible if mobility costs are significant.

The limitations on this mechanism are clear. No individual is completely immobile; if the firm becomes a sufficiently large (implicit) creditor to the worker, the worker has an incentive to leave the firm and seek work elsewhere. Consider once again the example developed above: a worker whose productivity before training is $15,000 per year who is able to acquire additional skills in three years, but only if his current productivity is reduced by one-third during the training period, to $10,000 per year. If employers, with access to capital at 10 percent, finance the entire investment for all workers, they will presumably pay the worker $15,000 per year during the training period and after. The equilibrium productivity of workers with these skills would be $16,749 (assuming firms would continue to train workers as long as the returns to them, the employers, remain positive when the investment is evaluated at 10 percent). Barring any collusive agreements among employers, firms would be willing to pay up to $16,749 for trained workers, if they could find them. Obviously mobility costs must be substantial for workers to accept $15,000 per year in the current firm when $16,749 per year is available from other firms. Less significant mobility costs would permit firms to finance only a portion of the training costs.

One interesting model combines on-the-job investment and the mobility process within a life cycle framework, Jovanovic (1979b). Jovanovic argues that the time profile of on-the-job learning will interact with expected mobility in a systematic way in an optimal investment program. Given the high turnover rates among new hires, perhaps due to job shopping over nonpecuniary aspects of the job, employers may not offer valuable training opportunities to new entrants until they have shown that they are stable and unlikely to leave the firm for an alternative employer. See also Lester (1954) and Bishop (1985). As a consequence, the life cycle profile of job learning intensity may increase early in the individual's career, not decline as assumed in the standard on-the-job training model, Equation (12). The Jovanovic hypothesis assumes that on-the-job learning activities include important worker/firm match specific elements: the returns to on-the-job learning are partly (or wholly) dependent on the worker having a continuing relationship with the firm in which the investment takes place. By definition, interfirm mobility will completely depreciate the specific human capital. Similar results hold for general capital with positive mobility costs.

VI. Worker Immobility and the Employer Holdup Problem

The employer has mechanisms for providing the worker with a loan that is not vulnerable to bankruptcy or to default in the usual sense. To the extent the worker's job mobility is limited by effective long term employment contracts or by high transaction costs, the firm can finance the worker's training costs by paying the worker more than his productivity during the training period and then recovering the expenditures by paying the worker less than his productivity in the post-training period. Both explicit long term contracts and intrinsically high worker mobility costs introduce their own difficulties, however. A few of these are considered here as are the market forces that ameliorate their effects.

Long Term Employment Contracts. If it were possible to bind the worker to the firm, it would not be difficult in a static world to design a long term employment contract that permits the employer to absorb some or all the training costs, if that is efficient. If the labor market in which the basic employment contract is negotiated is competitive, post-training wages will be set at a level that just compensates the firm for its training outlays. The least cost provider of capital in this relationship will absorb the majority, perhaps all, of the training costs, as efficiency dictates.

Unfortunately the world is dynamic, not static; conditions are constantly changing and in unpredictable ways. Complete worker immobility is almost surely inefficient in such a dynamic environment; an unexpected increase in the worker's productivity outside the firm or a sudden decline in the worker's productivity inside the firm calls for the reallocation of the worker to a more productive work setting. Explicit mobility bonding schemes can in principle handle this problem, Mortensen (1978) and Hashimoto (1981). See also the review in Parsons (1986). The party that wants to break the contract can be required to pay a penalty to the other party for the breech; properly designed in an ideal environment, such a bonding mechanism can induce efficient behavior.

The use of explicit bonding schemes in this case is limited by information problems, most obviously the identification of the party that precipitated the job change. This critical information may not be observable to an outside (enforcement) party. The worker may voluntarily leave the firm (quit), but only under (unobservable) pressure from the firm; conversely the firm could lay off or fire the worker, but only after the worker became slack or malfeasant on the job. Hashimoto and Yu (1980) consider more efficient contracts with imperfect observability. The mobility bond is indexed to observable proxies correlated with separation culpability; the efficiency of the bond then is a function of the quality of the proxies.

Casual empiricism suggests that such elaborate mobility bonding schemes are not often observed in practice, and that the difficulties in implementing explicit long term contracts are serious ones. Whether this is the result of intrinsic problems in the approach or to legal problems of enforcement of long term employment contracts is unclear. The legal enforcement of long term contracts is at best fitful, Green (1989). Enforcement depends in the main on interpretations by the various state court systems, which vary in their commitment to contractual agreements of this sort over time and across states. In general courts seem reluctant to restrict the worker's freedom to seek alternative jobs.

High Mobility Costs. High interfirm mobility costs provide an alternative to enforceable long term contracts. If it is expensive for the worker to relocate, then the firm can hope to pay the worker a wage less than productivity in the post-training period without losing him or her to another firm. A concern naturally arises, however: what keeps the firm from extracting more than its share of training costs? Once the worker is in place, the potential for exploitation of immobile workers would seem a real one. What keeps the employer from squeezing all quasi-rents out of the worker? Of course there exists a symmetry here if the firm invests in the worker, the worker may attempt to extract a disproportionate share of the returns by threatening to leave the firm; such a threat becomes less credible the higher mobility costs, but it is never totally absent.

If the labor market in which the original job commitment is made is a competitive one, the firm could not expect to extract more than its share of training costs out of the worker, at least if the worker correctly aniticipates the firm's post-training wage behavior. If the worker anticipates that the employer is going to act exploitively in the post-training period, then the worker will require a higher current wage from the firm. In a sense the unreliable firm will be forced to accept a larger share of the investemnt. Conversely if the firm anticipates that the worker is going to capture a disproportionate share of the rents, it will insist that the worker bear a greater share of the investment costs.

The efficiency problem is that the investment cost sharing decision may be made, not on the basis of differential access to capital, but on the basis of expectations of future quasi-rent sharing. This problem has been considered at length in the employment contracting literature. Specifically a literature has developed considering the most extreme possibility of an employer-employee lock-in, "firm specific human capital", in which a skill only has value in one firm, presumably the firm in which the training occurs, Becker (1975) and Oi (1962). More widely valued human capital with positive mobility costs can be considered a generalization of the specific human capital model (mobility costs induce economic specificity).

Two approaches to implicit contracting and specific human capital investment sharing have been proposed, both of which stress the anticipation of subsequent quasi-rent sharing in the determination of investment cost shares. The early literature -- Becker, Oi, and also Parsons (1972) -- focused explicitly on the interplay between the specific human capital financing decision and job mobility. The worker is never completely immobile; individual heterogeneity insures that worker mobility is only a probability statement: some workers will stay, others leave, with only the proportion of stayers and movers in the work place changing as compensation changes.

This literature explores a weak form of employment contract; wages are fixed (with mobility processes in mind) and firms and workers respond through layoffs and quits respectively. In these models, the worker quits whenever outside productivity exceeds the (fixed) wage, and the firm lays off the worker whenever the wage exceeds inside productivity. Job separation is not fully efficient under this simple contract if outside and inside productivity are subject to random shocks, due to product market demand fluctuations, technological shifts, Hashimoto (1981) and Parsons (1986). The incentives of the two parties do not adjust optimally in this stochastic environment. Becker (1975) first proposed that there may be some optimal investment sharing between firm and worker that will minimize this inefficient separation. The financing of and returns to the investment will be shared between firm and worker because some investment by each reduces the incentives for unilateral withdrawal from the relationship by the other: investment sharing is a form of mobility bond. The investment sharing is not fully optimal, depending as it does on the bonding device, namely the shapes of the quit and lay off functions as well as on more fundamental factors.

A second approach to investment cost sharing also places much emphasis on the forces that determine post-training rent sharing, Grout (1984). As in the turnover model, Grout argues that the worker and firm are forward looking, that they can anticipate the outcome of subsequent bilateral bargaining, and that they accept financial shares based on this perspective. He employs a bargaining model rather than a relative turnover model as the structure that underlies rent sharing in the post-training period. Specifically he assumes that a Nash bargaining model can be used to formalize the "solution" of the bargaining process. Bargaining models of this sort assume that the bargaining outcome has features consistent with some set of stylized facts. The Nash model, for example, assumes that the bargaining outcome meets an intuitively plausible fairness criterion. The efficiency problem is the same as in the turnover model -- the sharing is driven by a process other than access to capital.

Reputational Enforcement of Implicit Contracts. The market itself may generate (partial) solutions to the hold-up problem, especially through reputational forces. Employers, especially large employers, may find it profitable to behave as if they are legally bound to a contract, even when they are not. In the current case, the firm may behave as if it has a commitment not to exploit the worker once the worker is locked-in to the firm.

Despite the potential importance of these reputational forces, empirical evidence on the situations in which they are operative remains limited. The evidence indicates that reputational enforcement of implicit employment contracts is largely a large firm phenomenon. It may be useful to consider briefly an important example of this literature. Consider the inflation-adjustment of retiree benefits after retirement. Such adjustments are rarely contractual commitments, but instead depend on reputational forces for performance. In that respect such adjustments provide strong evidence for (or against) the existence of reputationally enforced employment agreements. Clark, Allen, and Sumner (1986) report on the post-retirement adjustment of pensions during the high (and unexpected) inflation period of the 1970's. In the pension sample analyzed by Clark, Allen, and Sumner, the change in benefits as a percent of the change in CPI over the 1973-1979 period among pre-1972 retirees was 37.9 percent (p.185). The adjustment was 45.2 percent among union plans, only 29.2 percent among nonunion ones. Much of this difference, however, appears to be due to the disproportionate union representation in large firms. Consider the reported variation in post-retirement adjustments in benefits by collective bargaining status and plan size:

The Change in Mean Pension Benefits between 1973 and 1979
As a Percentage of the Change in CPI among Pre-1973 Retirees,
By Plan Size (1979) and Collective Bargaining Status

	1-99	100-499	500-999	1000-4999	5000-9999	10,000+
Collective Bargaining	6.3%	18.8%	17.9%	13.3%	33.3%	66.7%
No Collective Bargaining	5.2%	26.7%	25.0%	15.8%	32.5%	42.8%

Source: Clark, Allen, and Sumner (1986).

Parsons (1988) has confirmed the Clark, Allen, and Sumner findings in a multivariate analysis based on the older male cohort of the National Longitudinal Surveys. Large firms appear to be much more driven by reputational processes than are smaller firms, which in turn suggests that workers may be more likely to enter into long run relationships, for training or other purposes, with large firms.

VII. Secular Trends in Work Place Structure: Consequences for the Supply of Training

Recent industrial trends have strongly favored smaller, nonunion work places. The decline in the large firm sector is largely attributable to the well-noted (relative) decline in manufacturing employment, and the growth of the service sector. The economies of scale that induced the rapid growth of large industrial enterprises in earlier periods are apparently more limited in the service economy that has blossomed in the past several decades. This industrial restructuring is apparently a long term one;

between 1970 and 1986, employment in the manufacturing sector declined as a share of total employment from 26.4% to 19.1%, U.S. Bureau of the Census (1987, p. 379). Over the same time interval, employment in the service sector expanded from 25.9% to 31.3%. Even within industrial sectors, trends appear unfavorable to the growth of large enterprises. Although consistent time series data on recent trends in firm size within industries is unavailable, casual evidence suggests that firm size has declined within sectors as well as in aggregate.

Reflecting in part this structural shift, the unionized sector of the labor market has shrunk dramatically. The decline in union representation in the work force has been precipitous, with union membership dropping from 25.6% of nonagricultural employment in 1973 to 14.1% in 1985, Farber (1985). This decline again is only partly explained by sectoral shifts, Farber (1985).

What is less clear is the implications of this industrial restructuring for the provision of on-the-job training. As noted above, Section II, several economists have argued that training is disproportionately carried on in the nonunionized, small firm sector. Schiller (1986) reports that learning among new entrants to the labor force occurs disproportionately in small firms. These firms on net lose experienced workers to larger firms. Mincer (1983) finds that union workers are less likely to receive training than are nonunion workers.

Does this mean that the aggregate supply of trained workers is improved by these recent sectoral shifts? I think not. I suspect that the preponderance of training activities in small, nonunionized firms is limited to the provision of relatively rudimentary job skills. Employment in a fast food outlet, a common entry level job, no doubt teaches the young person a number of useful job skills, including the value of punctuality and cooperation. What is more difficult to undertake efficiently in the small firm setting is the training of highly skilled craftsmen and operatives. The individual worker's problem in financing a training program is likely to increase with the size of the investment. A highly skilled machinist, under current limitations on contracting, may have serious financial difficulty financing his investment. At the same time, the low mobility costs implied by a large number of similar firms make the investment an unattractive one for the small employer to finance; the likelihood that the employer will be able to capture a significant share of the training returns is small. If true, the training of highly skilled workers may become a matter of increasing concern in coming years.

VIII. Public Policy Issues: Support for Private Job Training

The policy issue is an important one: how best to foster the efficient provision of job training. I have argued above that the main problem is one of financing. The firm typically has access to credit at rates substantially below those available to most trainees. The firm cannot simply lend the worker the resources, however, because of the possibility of bankruptcy and default. If the worker is relatively immobile (has high job changing costs), it may be possible for the firm to lend resources implicitly to the worker through its wage policy, in a sense absorbing the investment costs (and returns) itself. This avenue of finance is partly dependent on high job mobility costs, however, and especially in this period of sectoral shifts toward smaller firms (and perhaps lower intrinsic mobility costs), consideration of alternative financing mechanisms is essential.

Direct provision of training programs by the government is not likely to be productive (beyond the provision of basic skills to seriously disadvantaged individuals). The main argument against direct government involvement is informational; the market is a complex one, with thousands of firms demanding thousands of skills and in turn supplying a corresponding number of job training opportunities. Knowing which services to offer and which to eliminate is an immense coordinating task. Clearly this is a market in which decentralized decision-making is essential.

The issue is how to encourage and support job training at arms length, that is with limited direct governmental micro-management. An obvious solution is the public provision of job training loans to workers, comparable to educational loan programs. To state the solution is to state the problem: the government student loan program has faced the same sort of problems that have beset the private capital market. Particularly among the young, access to a large amount of capital is an invitation to default and bankruptcy. More importantly it is an invitation to fraud, of which this group, especially the least educated, are themselves likely to be victims. To the extent that job training is less well defined than is formal schooling, the invitation to deception and fraud by suppliers of training is increased. Without a fundamental change in the rules of the game, the problem is likely to remain severe.

A few positive steps to assist the efficient functioning of this market have recently been made, the most obvious being the "repeal by inflation" of the minimum wage. The beneficiaries of this policy shift are likely to be the least skilled, those whose training wage would drop them to minimum wage levels, historically around one half the average wage in manufacturing. The policy is likely to have had little impact on highly skilled workers, such as machinists, whose training wages are likely to be well above the minimum wage (although this fact may be changing with the increased competition in this sector). In that sense eliminating the minimum wage is only a partial step toward a more complete solution of the training problem, although perhaps an important one, given the social interest in the well-being of the least skilled.

Tax policy is another potential mechanism for the governmental encouragment of job training in the private sector. Current tax laws permit (require) training costs to be "expensed" rather than amortized over the life of the investment as with physical capital investments. If i) the tax structure is not progressive and ii) the interest rate is positive, this tax system favors human capital investments, whether undertaken by the firm or by the worker. The rate-of-return measurement problem (discussed in Section IV) above makes difficult a quantitative assessment of the impact of the tax structure on training activity. The use of tax policy to foster indirectly various governmental non-revenue objectives is currently out of fashion, but that condition may not last.

Given that the financing problem is at its core a property rights issue, reformation of the contract system would seem to offer hope for significant improvement. The issue is a delicate one, however, since the limitations on the ability to contract, i) the right to declare bankruptcy when debts exceed assets, and ii) the right to (relatively) unrestricted job mobility, are based on important social values. It is possible, however, that modest adjustments could be made in each that would facilitate the supply of credit to trainees. It may be enough to strengthen the worker's right to contract with the firm over a specific employment period, or at least a period in which the individual would not work for a competitor, thereby encouraging worker-firm training relationships that are now partly, and imperfectly, cemented by positive mobility costs. Elimination of bankruptcy possibilities for a certain class of loans is another alternative, although the potential for creditor abuse of financial structure is a real one. In a sense what is required is a refashioning of apprenticeship contracts.

The encouragement of employer training collectives for the development of skills specific to an industry or type of technology may also be useful. If a highly specialized skill is demanded by a relatively small number of employers, a training cooperative may be designed so that the employers with their access to lower cost capital may have an incentive to finance the investment activity themselves. As argued at length above employers will agree to finance investments in worker skills only if they are able to capture the returns on the investment through subsequent wage payments that are less than the worker's productivity (by an amount sufficient to compensate them for the training costs they incur). An agreement to share the costs of training in proportion to the employer's share of new trainee hires would achieve the desired object if combined with a "no raiding" agreement on previously hired workers. In the absence of such an agreement a charging mechanism based on the new hires of trainees would break down, with rational employers bidding up the wages of experienced workers to the value of marginal product, thereby eliminating the necessary payback period. A "no raiding" agreement is unattractive for a variety of reasons: there are, for example, many reasons for workers to want to change jobs that do not involve wages, e.g. changes in geographic preferences and personality conflicts with supervisors and coworkers.

An alternative charging mechanism that would permit workers to change jobs freely and at the same time protect the employer's investment in the worker would be an agreement by the employer to share training costs according to the total number of cooperatively trained workers currently on the employer's payroll. If aggregate training levels are stable over time this charging scheme is efficient: employers could hire trained workers from other firms, but they would be responsible for the workers' training costs as well as for the workers' current wages. The employer's wage offer would therefore reflect the value of the worker's product less the appropriately amortized charge for the costs of training incurred by the cooperative; the worker would not be able to "capture" the gains in his or her productivity that resulted from the employers' joint investment in the worker.

The collective provision of training reduces the free rider problem that makes the employer financing of training unremunerative. The level of interfirm cooperation required in the training cooperative, however, raises serious antitrust concerns. It may be necessary to give an explicit antitrust exemption to the activity if it is to be attractive to employers, perhaps along the lines of existing legislation designed to foster joint research and development activities among firms. Such a relaxation would not be likely to increase significantly the probability of a successful product market cartel, which is the primary focus of the antitrust laws.

The problem of efficient training mechanism is an important one, especially in this period of intense international competition. Japanese employers, a major focus of competitive concern, are felt to have significant advantages in the provision of training opportunities, because of cultural biases against job mobility, and toward greater industrial harmony, Hashimoto (1989) and Mincer and Higuchi (1988). Whether these "cultural" factors are a cause or a consequence of the rapid, sustained growth of the Japanese economy is not clear. Nonetheless the concern is a significant one, given the importance of job training. Deeper consideration of the property rights system that supports and retards the training process is warranted.

REFERENCES

Barron, John M., Dan A. Black, and Mark A. Loewenstein. 1985. "Worker Heterogeneity and On-the-Job Training." mimeo.

Becker, Gary S. 1975. Human Capital. New York: Columbia University Press.

Ben-Porath, Yoram. 1967. "The Production of Human Capital and the Life Cycle of Earnings." Journal of Political Economy 75 (August), 352-65.

Bishop, John. 1985. "Preparing Youth for Employment." Mimeographed. The National Center for Research in Vocational Education, The Ohio State University.

Cho, Woo. 1983. "Promotion Prospects, Job Search, and the Quit Behavior of Employed Youth." Mimeographed, The Ohio State University.

Fleisher, Belton M. 1981. Minimum Wage Regulation in Retail Trade. Washington, D.C.: American Enterprise Institute.

Freeman, Richard B., and James L. Medoff. 1984. What Do Unions Do? New York: Basic Books.

Galenson, David W. 1981. White Servitude in Colonial America. Cambridge: Cambridge University Press.

Green, Wayne E. 1989. "Courts Skeptical of 'Non-Compete' Pacts." Wall Street Journal, Wednesday January 11, 1989: B1.

Grout, P. 1984. "Investment and Wages in the Absence of Binding Contracts: A Nash Bargaining Approach," Econometrica 52 (1984):449-461.

Haley, William J. 1976. "Estimation of the Earnings Profile From Human Capital Accumulation," Econometrica.

Hanushek, Eric A., and John M. Quigley. 1985. "Life-Cycle Earning Capacity and The OTJ Investment Model." International Economic Review 26 (June), 365-385.

Hashimoto, Masanori. 1981. "Specific Human Capital as a Shared Investment." American Economic Review 71, 475-482.

_________. 1982. "Minimum Wage Effects on Training on the Job." American Economic Review 72 (December), 1070-87.

_________. 1989. "Employment and Wage Systems in Japan and their Implications on Productivity: A Transaction-Cost Perspective." Brookings Institution Conference on Alternative Compensation Schemes.

Heckman, James. 1976. "A Life Cycle Model Of Earnings, Learning, and Consumption." Journal of Political Economy. 84 (August, Supplement): S11-S44.

Jovanovic, Boyan. 1979. "Firm-Specific Capital and Turnover." Journal of Political Economy 87 (December), 1246-1260.

Lazear, Edward. 1979. "The Narrowing of the Black-White Wage Differential is Illusory." American Economic Review 69 (September): 553-63.

Leighton, Linda and Jacob Mincer. 1981. "Effects of Minimum Wages on Human Capital Formation" in Simon Rottenberg, ed., The Economics of Legal Minimum Wages. Washington, D.C.: American Enterprise Institute.

Lester, Richard A. 1954. "Hiring Practices and Labor Competition." Industrial Relations Section, Princeton University.

Mincer, Jacob. 1962. "On-the-Job Training: Costs, Returns and Some Implications." Journal of Political Economy, Supplement 70 (October).

__________. 1974. Schooling, Experience, and Earnings. Columbia Press for NBER, New York.

__________. 1983. "Union Effects: Wages, Turnover, and Job Training", Research in Labor Economics, Sup.2, 217-252.

Mincer, Jacob and Boyan Jovanovic. 1981. "Labor Mobility and Wages" in Sherwin Rosen, ed., Studies in Labor Markets, The University of Chicago Press: Chicago.

Mincer, Jacob and Yoshio Higuchi. 1988. "Wage Structure and Labor Trunover int he United States and Japan." Journal of the Japanese and International Economies 2 97-133.

Mortensen, Dale. 1978. "Specific Human Capital and Turnover." Bell Journal of Economics 9 :572-586.

__________. 1986. "Job Search and Labor Market Analysis." in Orley Ashenfelter and Richard Layard, eds., Handbook of Labor Economics, North Holland Press, 849-919.

Parsons, Donald O. 1985. "Wage Determination in the Post-Schooling Period: The Market for On-The-Job Training", in Pathways to the Future, Vol. VI, Chapter 7, Center for Human Resource Research, Ohio State University.

__________. 1986. "The Employment Relationship: Job Attachment, Work Effect, and the Nature of Contracts" in Orley Ashenfelter and Richard Layard, eds., Handbook of Labor Economics, North Holland Press, 789-848.

__________. 1987. "The Distribution of Rents in Union and Strategically Unorganized Work Places", mimeo, 1987.

__________. 1988. "The Provision of Private Pensions: An Equilibrium Approach, mimeo.

Reagan, Patricia. 1988. "On-the-Job Training, Layoff by Inverse Seniority, and the Incidence of Unemployment", mimeo, Ohio State Unviersity.

Rosen, Shervin. 1972. "Learning and Experience in the Labor Market." Journal of Human Resources 7 (Summer), 326-42.

____________. 1976. "A Theory of Life Earnings", Journal of Political Economy 84 (August, Supplement): S45-S68.

Schiller, Bradley R. 1986. "Early Jobs and Training: The Role of Small Business". Final Report on Conntract SBA-9281-AER.

Weiss, Yoram. 1985. "The Effect of Labor Unions on Investment in Training", Journal of Political Economy, 93 (October), 994-1007.

____________. 1986. "The Determination of Life Cycle Earnings: A Survey." in Orley Ashenfelter and Richard Layard, eds., Handbook of Labor Economics, North Holland Press.

7a. EMPIRICAL EVIDENCE ON PRIVATE TRAINING

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7a. EMPIRICAL EVIDENCE ON PRIVATE TRAINING

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Introduction

A number of recent developments--concern about the ability of American firms to compete in international markets, the perception (as yet unreflected in official productivity figures) that we are in the midst of unusually rapid technological change, and the belief that taking advantage of technological opportunities will require a better-trained workforce--have combined to increase interest in improving the education and training of the labor force. While this interest has not yet led to either major increases in resources devoted to upgrading the workforce or a decision to welcome many highly-educated would-be entrants from abroad--indeed, perhaps *because* major changes have not yet occurred--this is a good time to take stock of what we know about the training of the U.S. labor force.

This paper focuses on training provided by private employers, with some comparisons with training received by government workers. After a discussion of the difficulties of measuring training, the paper summarizes recent evidence on the extent of training in recent data, and available evidence on trends over time. Differences in access to training among different population groups are discussed next. Finally, attention is turned to two narrower questions of more direct policy interest: training offered by different-sized employers and training in minimum-wage jobs. Implications of these findings for policy are discussed in the concluding section.

Measuring Training

Obtaining information on the extent of training of the workforce is complicated both by conceptual problems and by difficulty in actually measuring those aspects of training which seem relatively well-defined.

Much of the conceptual difficulty of measuring employer-provided training is due to the fact that an important part of such training occurs informally, on the job. While there are difficulties in measuring formal training, what we would like to measure is relatively well-defined: an individual is either in a training program or not, formal training has a identifiable start and end, and one should in *principle* be able to determine either how many hours the worker spent, or how many dollars the employer spent, on any particular training program.

Informal training is produced jointly with the primary output of the worker, and is therefore more elusive. Workers learn from watching other workers, may share easier ways to do the work either while working or during breaks, and are indirectly "instructed" whenever a supervisor constructively criticizes their work. Knowing whether informal training is happening in any given week may be difficult to determine; one hopes that for most workers it never ends. The dollar cost is illusive not only because the time spent by supervisors and other workers is not logged, but also because the worker's productivity is likely to be reduced while in training. Thus, it is difficult to measure informal training in hours (from the worker's side) or in dollars (from the firm's side). This poses problems for understanding what is happening to employer-provided training, overall.

In addition to conceptual problems, there are narrower problems of measurement as well. While in principle the costs of formal training programs should be known to firms, in fact reliable figures seem to be hard to come by. Moreover, surveys which are directed toward firms typically elicit little information about workers (detailed information about their education is thought too burdensome, while other characteristics such as race are thought too sensitive); questions directed to workers may lead to inaccurate data about things one might think the worker knew (the size or industry of the firm, and even the worker's own wage rate).

In addition to these conceptual and measurement problems which are reasonably well known, there is another (unanticipated) recurrent shortcoming in many of the studies discussed below: they are known to be based on stratified samples of workers or firms, yet no weighting to a population total of interest is undertaken.

Faced with these difficulties in directly sighting training, economist-hunters often look instead for its tracks: if training makes people more productive, wages of workers receiving training should rise faster than wages of those who do not. If one assumes wages rise only because of training, one can indirectly infer how much training is occurring from wage data alone (Mincer, 1962).

Unfortunately for economist-hunters, other beasts leave similarly-shaped tracks. Those of an institutional persuasion will object that wages seem to rise with seniority independent of productivity (Medoff and Abraham, 1981). Others have noted that wages rising with tenure provide incentives for workers to work hard, in order to collect the implied bonus; Lazear and Moore (1984) claim that such incentives may be more important than rising productivity in explaining wage increases. Freeman (1979) notes that demographically-induced shifts in age-earnings profiles argue against assuming that age-earnings profiles are driven solely by individual human capital investments. Topel and Ward (1988) argue that job changing is an important source of earnings growth. While one can treat such job-changing as the result of individual investments in job-search, and hence as "human capital," it clearly is not investment in training as generally understood. Consequently, direct measurement of private training is emphasized in this paper.

All of this is an extended apology for the fact that much of what we would like to know about training is not known. Data on informal on-the-job training is sparse compared to formal training programs, and hard data on the extent or cost of training is much less common than information on participation. Thin as our knowledge base is at a point in time, it is even harder to know whether things are getting better worse. For all their shortcomings, data on educational attainment are far more extensive than comparable data on post-school training.

Extent of Training

Table 1 provides both an introduction to the major sources of information about employer-provided training and an overview of the extent of training as measured in these surveys.

All of the surveys in Table 1 which ask whether an individual has received or is receiving training are population surveys which, when weighted, should be expected to describe the U.S. labor force. The three studies which present estimates of the proportion of those employed who received formal training from their current employer (Haber (1985), Lillard and Tan (1985), and Hollenbeck and Willke (1985)) all find that roughly 10 percent of those employed have received such training. Tierney's (1983b) estimate of 5 percent is lower because it refers to the year preceding the survey; indeed, given the difference in reference periods, it's surprising that it is as high as it is. Lillard and Tan (1985) is the only study in this group with explicit data on informal on-the-job training; they show it to be somewhat more common than formal training (15 percent of those employed having learned needed skills this way). Even allowing for the fact that this figure does not count skills learned informally on previous jobs, it is lower than one would expect if such training is the major force behind the tendency of earnings to rise with time on the job.

Duncan and Hoffman's (1978) estimate that 20 percent of those employed are currently receiving training is based on a different way of approaching the question. Rather than asking whether one had received training and if so what sort of training (as the CPS analyzed by Lillard and Tan did), the PSID sequence used by Duncan and Hoffman asks the worker how long it takes for a new worker to become fully trained and qualified, and they then count as receiving training anyone who has been on their current job for that length of time or less. That their estimate of those currently receiving training is close to Lillard and Tan's estimate of those who have received training on their job suggests to me that rather subtle semantic distinctions ("receiving training" versus "becoming fully trained and qualified") may have a rather large impact on our estimate of the extent of training--particularly for the more elusive informal on-the-job training.

This difference in approaches to measuring training leads to even more striking differences in estimates of weeks of training for those who have received it. For those studies which are based on direct questions about formal training, the estimates for length of training range from 6 to 9 weeks. Of course, some individuals will not have completed their program, so completed training should be somewhat longer in average duration. Duncan and Hoffman's estimate of how long it takes to become fully trained and qualified runs much higher--over 1.5 years.

Also shown in the table is an estimate of how long it takes to become fully trained and qualified from Bishop and Kang's (1984) analysis of the Employment Opportunities Pilot Project (EOPP) data. While the difference between this estimate and Duncan and Hoffman's is striking, the unusual sampling frame of EOPP explains at least a significant share of the difference. EOPP over-sampled low-wage employers, and the question refers to the most recent hire, so that even within the firm, low-wage, high-turnover jobs are over-represented. Unfortunately, none of the published analyses of EOPP data appear to have re-weighted the data to be representative of jobs at all points on the wage scale. Whether one focuses on workers or new hires depends on one's question: focusing on workers is more appropriate for characterizing the stock of training in the workforce, while focusing on new hires may be more appropriate for assessing the costs to employers.[1]

Data on hours of training are sparser still. Tierney's (1983) tabulation of CPS data on formal training produces an estimate of about

120 hours. In contrast, Bishop and Kang's estimate for the EOPP population is only 11 hours. What is striking in Bishop and Kang's data is the relative importance of formal and informal training. Depending on whether or not one counts time spent watching others do the job, informal training (for those who receive it) lasts considerably longer than do formal training programs. While I strongly suspect that the disparity is enhanced by the sample being studied (one typically imagines formal training to be more concentrated on higher-wage workers), I also suspect the message that formal training is the tip of the iceberg is not completely an artifact.[2]

While one might be inclined to dismiss the EOPP data as referring to a special and unrepresentative population, it is certainly a population of considerable policy interest. It also contains one of the few estimates of the costs to firms of training workers. By combining data on time spent by new employees, their supervisors, and coworkers on training with productivity indices for newly hired and more senior workers, Bishop (1982a) estimates that training costs in the first three months amount to 30-64 percent of a more experienced worker's productivity or wage over the same three-month period. The range in the above estimate is due partly to assumptions used in combining training and productivity indices, but the largest difference is between different occupational groups, with estimates for professional, technical, and managerial workers roughly twice as high as those for service workers, with other white-collar workers and blue collar workers falling in between.

Hill (1987) collected specific estimates of components of training costs (formal training programs, informal training, wages in excess of productivity, materials, and outside training) in occupations in which employers typically prefer but do not require education beyond high school.[3] She concluded that firms spend an average of $8500 and from six months to two years to train high school graduates for these occupations. Postsecondary education reduced these costs by more than a quarter on average, but they remain substantial. Informal training costs were roughly twice those of formal training, with wages in excess of productivity the largest component of all.

Finally, information from a study by the Bureau of National Affairs's Personnel Policy Forum illustrates just how difficult it is to get reliable information on training costs from employers. Roughly half of the sample (which over-represents large firms) has a separate training budget (so, presumably the relevant fraction is considerably less than half among all firms). Only seven percent of the 140 panel firms reported (formal) training costs per employee; for these 10-11 firms (depending on year), median costs per trainee were $122-250. The study correctly flags the low response rate.

Trends Over Time

Data on trends in employer-provided training over time appear to be limited to tabulations of Current Population Survey Surveys of Adult Education in 1969, 1972, 1975, 1978, and 1981. Medoff's (1982) analysis of the first four of these surveys finds no trend in the probability of private sector workers participating in employer-provided training programs at their place of work. He does find an increase between 1978 and 1981 in the probability of participating in any employer-sponsored programs, suggesting an increase in off-worksite but employer-sponsored training in this period.

He finds a sharp drop in hours of training programs provided by employers at the workplace between 1972 and 1978,[4] and no increase in total hours of employer-sponsored training programs (regardless of location) over the 1969-78 period. Given evidence that employers were finding it harder to recruit suitable workers over much of this period, Medoff finds the lack of evidence of increased training surprising. From a more recent perspective, where the allegedly increased interest in short-term payoffs has led to fears that training is being reduced, the participation numbers are encouraging and the hours numbers perhaps less surprising.

Tierney (1983b) presents trends in participation in employer-provided (i.e., employer-sponsored, at-the-workplace programs) between 1968 and 1981, presenting both private-sector and government-worker participation rates. He finds no trend for private workers, but an upward trend for government workers.

Differences Among Workers

Several studies have compared the training (typically, the probability of having received any) between different groups of workers. Here I summarize findings for several such comparisons.

The most surprising result is the lack of consensus on whether men or women acquire more training. Duncan and Hoffman (1978) and Haber

(1985) report, as one might expect given the literature on labor force interruptions and post-school training, that women receive less training than men. Tierney (1983b) also finds this to be the case, though the differences are small and declined significantly in recent years. Hollenbeck and Willke (1985) find that males and female household heads receive more training. Lilland and Tan (1985) report that women are more likely to have received formal training, and have the same likelihood of receiving informal OJT in their CPS data. The National Longitudinal Surveys (which followed four birth x sex cohorts starting in 1966-67), however, seems to support the traditional view--mature women receiving less training than either young men or older men--though any conclusion is complicated by lack of a direct comparison between men and women the same age. The "new NLS," which followed a cohort of males and females, age 14-21 in 1978, also finds young men are more likely to receive on-the-job training than are young women (Lynch, 1989).[5]

Whites receive more training than blacks (Lillard and Tan, 1985; Tierney, 1983b; Duncan and Hoffman, 1978; Lynch, 1989). The only surprise here is that Lillard and Tan find the difference is in access to formal programs rather than informal on-the-job training.

More educated workers get more training (Bishop, 1985; Lillard and Tan, 1985; Haber, 1985; Hollenbeck and Willke, 1983, Duncan and Hoffman, 1978).[6] The only debate here seems to be whether the relationship persists when those with a Ph.D. or professional degree are compared to those with masters degrees.

Results for differences in previous experience are somewhat richer, though not completely consistent between studies. Mincer (1988) finds that more experienced workers are more likely to have received training, but less likely to be receiving it. Duncan and Hoffman (1978) find that both general experience and years of experience with current employer prior to current position increase the training in one's current position. Lynch finds positive effects of general experience but not years with employer. Bishop (1985) reports that greater relevant experience is associated with jobs which require more time for an untrained worker to learn, but less training investment for the typical new hire--firms place those with more relevant experience in jobs which have more to learn, but such experience helps one learn them more cheaply.

Studies of differences in training between union and non-union workers appear not to have reached a consensus. Mincer finds unionization significantly negatively related to both training required by the job and probability of being in training. Barron, Black, and Loewenstein (1989) report that union workers are less likely to receive the types of training covered by EOPP, though the differences are typically not statistically significant. Bishop (1985) finds no appreciable relationship between unionization and either weeks to become fully trained or an index of hours of training. Lynch (1989) finds union workers more likely to receive training. Unfortunately, none of these studies explains why its results differ from others.

A number of other differences have been less frequently studied. Part-time workers receive less (formal) training (Haber, 1985; Hollenbeck and Willke, 1983). Lillard and Tan (1985) find some positive relationship between the rate of technical change in an industry and the probability of its workers receiving formal training, though evidence for this hypothesis is consistent only for those with education beyond a BA. Bishop (1982b) finds no statistically significant differences in training for workers hired under hiring subsidies (WIN for welfare recipients, or the Targeted Jobs Tax Credit for various disadvantaged groups), but significantly more training by both management and coworkers in jobs which received CETA OJT subsidies.

Training and Employer Size

There is considerable interest in the relationship between employer size and training, both because small employers are disproportionate hirers of young workers and because the role of small firms in generating new jobs has received so much attention. (In fact, existing small firms do not grow faster than large ones; small firms' role in job creation just reflects the fact that new firms create jobs and that new firms tend to be small. It would be important to distinguish between small firms and new ones, but available data do not permit this.)

Haber (1985) reports that Survey of Income and Program Participation (SIPP) respondents who worked for larger firms (at least 100 workers) were about twice as likely to participate in formal training programs. Given economies of scale in providing such training, this is the expected result. Barron, Black, and Loewenstein (1987a) report that larger establishments and firms with multiple locations are more likely to provide the types of training detailed in the EOPP data, and these differences are typically significant statistically. Bishop

(1982) finds that more training is provided by the largest and smallest firms; this u-shaped pattern persists when one controls for industry and occupation (Bishop, 1985). Consequently, there is no significant linear relationship between employer size and training in these data (Barron, Black, and Loewenstein, 1987b). Hill (1987, 1988) also reports mixed results.

Overall, the evidence suggests that larger employers provide more training, but the very smallest ones do, too. However, much of the evidence so far is based on the EOPP survey, in which low-wage, high-turnover jobs are over-represented. If training, wages, and employer size are positively related, the EOPP sampling scheme should attenuate the size-training relationship.

Minimum Wages and Training

Employers do not provide training on the job unless it is worthwhile for them to do so. Because training is costly, it is generally assumed that those receiving training earn lower wages while in training than they would if the firm were making no such costly outlays. However, for an individual whose value to employers is at or slightly above the minimum wage, "buying" training by accepting a lower wage is illegal! Consequently, it is sometimes proposed that young workers--those most in need of training--be subject to a lower minimum wage in order to not interfere with the training process.

It is tempting to dismiss this line of argument with the assertion that minimum wage jobs have so little training content that--whatever the desirability of minimum wage laws on other grounds--concern about effects on training is misplaced. If employers' reports about training of minimum wage workers are correct, however, more training than one might have guessed is going on in minimum-wage jobs. Converse et al. (1981) report that about half of minimum wage workers are in jobs which require formal training, and that this training lasts (on average) 12 days. Moreover, it takes a new worker 4-5 weeks to reach company standards of performance. Bishop and Kang's (1984) results for EOPP workers (who are disproportionately but not exclusively low-wage) are broadly consistent with Converse et al.'s results. While these are not overwhelming levels of training, they are high enough that it is worth asking whether they are changed by the minimum wage.

Evidence on this question is quite mixed. Perhaps the most direct evidence on the issue comes from Bishop's (1982b, pp. 182-183) analysis of EOPP data. He finds that, after controlling for wage rates generally, those who receive the minimum wage receive less training, both by management and peers. In fact, however, his dummy variables for minimum wage workers include both those paid the legally required minimum and those whose jobs are not subject to the FLSA (some of which pay less than the minimum).

Leighton and Mincer (1981) find that earnings growth and participation in training programs is lower in states where the impact of the minimum wage (measured by the ratio of the minimum wage to average wage adjusted for differences in coverage across industries) is higher. However, it is not clear whether this means that there is more training and wage growth in high-wage states generally, or whether the minimum wage is directly implicated by the evidence.[7]

Lazear and Miller (1981) compared earnings growth in industries newly covered by the 1967 amendments to the Fair Labor Standards Act, to see whether the payoff to work experience was lower there than in uncovered industries (which should not reduce their training in response to the minimum wage). They find no evidence for this hypothesis, though they emphasize the weakness of the data rather than claiming the training hypothesis has been disproved.

Hashimoto (1982) asked whether each period of work experience does less to increase earnings for those workers most likely (by virtue of low wages or employment in covered industries) to be constrained by the minimum wage. He obtains sensible results for young white males, but not for young black males. Once again, however, it is not clear whether this is evidence that low-wage workers profit less from experience or whether the minimum wage is an important constraint on their training.

My reading is that the evidence is inconclusive, and that trying to measure the effects of minimum wage laws on training by observing their effects on earnings growth is unlikely to succeed. Consider this back-of-envelope calculation. Suppose that investments in training earn a return on costs of 10 percent per year. If the production foregone in formal training equals the wage while time in informal training costs half of the wage (as would be true if productivity rose linearly from zero to the wage during the period of training), the typical individual in Corcoran et al.'s sample of minimum wage jobs would invest about 15 days' earnings in his/her training, or about $500 for a full-time worker. A 10 percent return on that investment would be $50 per year, or about 2.5 cents per hour for a full-time worker. So if this level of investment were precluded altogether by the minimum wage, its tracks in wage-gain equations would be awfully hard to detect. Obviously, this calculation is only a crude guesstimate, but I think it is dramatic enough that refinements are unlikely to alter the basic conclusion.

It is possible, however, that using the level of training from a period of relatively high minimum wage laws seriously distorts the calculation. One might argue that the Corcoran et al. data just show how much the minimum wage had, by then, reduced training. The current environment provides a chance to test this view, if a data-collection effort could be mounted before the rumored increase in the minimum wage occurs. Retabulating the Bishop and Converse et al. data in a way which highlighted coverage status would also be helpful.

Policy Implications

Often, learning that what we know about a particular policy is less than we had hoped "merely" undercuts the rationale for a policy we think is needed. In the case of training, the lack of information signals a serious limitation in what a direct policy attack might hope to achieve. The limited data available suggests that informal on the job training is at least as important as--and probably considerably more important than--formal training. But the major reason our knowledge about OJT is limited is that it is so difficult to measure with any precision. Researchers face some unique problems trying to measure training--neither firms nor workers have much incentive to respond thoughtfully to the questions we ask--but at least those answering our questions have no obvious incentive to mislead us. If one were to try to subsidize informal training, on the other hand, the incentives to exaggerate are obvious. Consequently, attempts to use subsidies have either focused on formal training or provided hiring subsidies which are not directly linked to any training commitment. The elusiveness of informal training makes it more difficult to subsidize than to measure.[8]

The current method of collecting information about training does not give any reason to hope that we will know much more about the subject in ten years than we do today. Occasional, uncoordinated efforts have their advantages, but they leave us with very little information about representative national samples of individuals apart from counts of those participating in formal training programs. If policy makers believe that concern about employer-provided training is likely to persist, the time to start a systematic data collection program is yesterday. The current volume of concerns about training voiced by firms may even be enough to drown out complaints about the costs of complying with an employer-based survey. But whether the data should be collected from employers or workers--or from a matched sample of workers and employers--depends on what it is about training that we most want to know.[9]

Because most of the training data summarized in this paper has asked about training on current job, and the sample is restricted to the civilian labor force, little has been said about training provided by the military. According to Hollenbeck and Willke (1985), about 2 percent of the labor force participated in armed forces training, which provided skills or training for their present (civilian) job. While this training may not loom large in the overall total of job-related training, the fact that the Armed Forces provides training to thousands of individuals each year, that it has a serious interest of its own in evaluating the performance of those it trains, and that most of its trainees pursue civilian careers after completing their military service means that there is probably a great deal about training in civilian occupations to be learned from the military.[10] Much of the training provided by the Armed Forces is for blue collar and service specialties, and is directed toward the middle rather than the top of the ability distribution. And, unlike many of the projects one might design, the major barriers to a serious study of military training and civilian labor markets are organizational (inter-agency cooperation) rather than conceptual.

Table 1: Summary of Extent of Employer-Provided Training

Type of Measure	Study	Data Set	Time Interval	Specific Measure	Proportion or Average Value
Received training	Haber (1985)	1984 SIPP	Time with current employer	Employer-provided training program	8%
	Lillard & Tan (1985)	1983 CPS	Time with current employer	Company [formal] training program	12%
				Informal OJT	15%
				Other training	5%
	Hollenbeck & Willke (1985)	1983 CPS	Time with current employer	Company [formal] training program	11%
				Informal OJT	14%
	Tierney (1983b)	1981 CPS	Last year	Employer-provided training programs	5%
	Duncan & Hoffman (1978)	1975 PSID	Currently receiving	Formal training or OJT	20%
Weeks of Training	Haber (1985)	1984 SIPP	Time since 1980 with current employer	Weeks employer-paid training at work	6 weeks
	Tierney (1983a)	1978 CPS	Last year	Weeks of employer-provided training	9 weeks
	Bishop & Kang (1984)	1982 EOPP	NA	Weeks to become fully trained	7 weeks
	Duncan and Hoffman (1978)	1975 PSID	NA	Weeks to become fully trained	86 weeks
Hours of training	Tierney (1983a)	1978 CPS	NA	Hours of employer-provided training	120 hours
	Bishop & Kang (1984)	1982 EOPP	First three months on job	Hours formal training	11 hours
				Hours informal training by supervisors	51 hours
				Hours informal training by coworkers	24 hours

NOTES

[1] If one worker quits, and is replaced and trained by the employer, one might argue the stock of relevant training was unchanged (depending on what the first workers's new job involves). But it is clear from the employer's viewpoint that the cost of training has increased.

[2] The EOPP numbers are no doubt biased downward by limiting the question to the first three months on the job. However, since the mean estimate of time to become fully qualified is roughly half of three months (7 weeks), I would not want to put too much stress on this quirk of the data. Converse et al. report considerably more formal training (an average, for those receiving formal training, of 52 hours or 12 days) among minimum wage workers, but that on average it takes about twice that long for workers to "reach company standards"--a lower level of performance, one would suspect, than "fully trained and qualified."

[3] Specifically, the occupations were computer programmer, EDP equipment operator, electric/electronic engineering technician, mechanical engineering technician, drafters, surveying technicians, and secretaries.

[4] Medoff offsets the potential distortion caused by a change in the maximum number of weeks of training allowed by Census coding procedures, by recoding all years data with the tighter top-coding convention.

[5] Lynch notes that the NLS training measure may miss informal on-the-job training.

[6] Lynch's (1989) education effects are positive but not statistically significant.

[7] Moreover, their results on earnings growth do not test directly whether the effect of experience on earnings growth is reduced by the minimum wage; yet this is the real question. Minimum wage laws could reduce earnings by reducing the probability of getting any experience, even if they don't change the training content of a given amount of experience.

[8] It is possible to tie a hiring subsidy to indicators of subsequent performance which one believes are related to training--e.g., wage growth or employment stability. Apart from the obvious incentive this creates for employers to shun those without a stable record of past employment, it is also unsuited to markets where promotions come from changes in employer rather than progress through an internal labor market. It is often alleged (though I am skeptical) that small employers provide entry level training only to find their workers "kidnapped" by larger firms.

[9] For example, data on costs must come from employers. Surveying employers is not without disadvantages; e.g., sampling designs which adequately represent small, new firms are difficult, whereas worker surveys contact the employees of such firms automatically.

[10] An anonymous reviewer suggested an in-process review of the Army apprenticeship program could usefully be studied from this perspective.

REFERENCES

Barron, John M., Dan A. Black, and Mark A. Loewenstein. "Employer Size: The Implications for Search, Training, Capital Investment, Starting Wages, and Wage Growth." Journal of Labor Economics 5(January 1987a):76-89.

Barron, John M., Dan A. Black, and Mark A. Loewenstein. "Job Matching and On-the-Job Training." Journal of Labor Economics 7(January 1989):1-19.

Barron, John M., Dan A. Black, and Mark A. Loewenstein. "Gender Differences in On-the-Job Training." Working Paper No. E111-87. Lexington: University of Kentucky, September 1987b.

Becker, Gary. Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education, 2nd ed. Chicago: University of Chicago Press, 1975.

Bishop, John H. "Do Employers Share the Costs and Benefits of General Training?" Working Paper No. 88-08. Ithaca, NY: Center for Advanced Human Resource Studies, New York State School of Industrial and Labor Relations, 1988.

Bishop, John H. "The Magnitude and Determinants of On-the-Job Training." In John H. Bishop et al., Training and Human Capital Formation. Columbus: National Center for Research in Vocational Education, Ohio State University, 1985.

Bishop, John H. "Match Quality, Turnover and Wage Growth." Working Paper No. 88-03. Ithaca, NY: Center for Advanced Human Resource Studies, New York State School of Industrial and Labor Relations, 1988.

Bishop, John. The Social Payoff from Occupationally Specific Training: The Employer's Point of View. Columbus: National Center for Research in Vocational Education, Ohio State University, 1982a.

Bishop, John H. (ed.). Subsidizing On-the-Job Training: An Analysis of a National Survey of Employers. Columbus: National Center for Research in Vocational Education, Ohio State University, 1982b.

Bishop, John H., and Suk Kang. "Why Do Employers Underinvest in On-the-Job Training?" In John H. Bishop (ed.), Hiring and Training Workers. Columbus: National Center for Research in Vocational Education, Ohio State University, 1984.

Bishop, John H., Kevin Hollenbeck, Suk Kang, and Richard Willke. Training and Human Capital Formation. Columbus: National Center for Research in Vocational Education, Ohio State University, 1985.

Bruno, A. Lee, and Jack Dickerson. "A Training for New Technologies--A Model for Public-Private Partnerships." Report to Employment and Training Administration, U.S. Department of Labor, 1982.

Blakemore, Arthur E., and Stuart A. Low. "Human Capital Formation of Youth: The Impact of Minimum Wages." Mimeographed. Tempe, AZ: Arizona State University, 1988.

Blau, David M., and Philip K. Robins. "A Study of Turnover in Low Wage Labor Markets." Final Report to Department of Health and Human Services, February 1985.

Bureau of National Affairs. Training and Development Programs. Rockville, MD: Bureau of National Affairs, Report No. 140, 1985.

Carnevale, Anthony P., Leila J. Gainer and Ann S. Meltzer. "Workplace Basics: The Skills Employers Want." Washington: U.S. Government Printing Office, 1988.

Carnevale, Anthony, and Goldstein, Harold. Employee Training: Its Changing Role and an Analysis of New Data, Washington DC: American Society for Training and Development, 1985.

Converse, Muriel, Richard Coe, Mary Corcoran, Maureen Kallick, and James N. Morgan. "The Minimum Wage: An Employer Survey." in Report of the Minimum Wage Study Commission, vol. 5, Washington DC: U.S. Government Printing Office, 1981.

Duncan, Greg J., and Saul D. Hoffman. "Training and Earnings." In Greg Duncan and James Morgan (eds.), Five Thousand American Families -- Patterns of Economic Progress, Vol. VI. Ann Arbor: Institute for Social Research, 1978.

Flanagan, Robert J. "Labor Force Experience, Job Turnover, and Racial Wage Differentials." Review of Economics and Statistics 56(November 1974):521-529.

Freeman, Richard B. "The Effect of Demographic Factors on Age-Earnings Profiles." Journal of Human Resources 14(Summer 1979):289-318.

Garen, John E. "Job Match Quality as an Error Component and the Wage-Tenure Profile: A Comparison and Test of Alternative Estimators." Mimeographed. Lexington: University of Kentucky, March 1987.

Garen, John E. "Wages and Tenure: Results and Interpretations from Some New Approaches." Mimeographed. Lexington: University of Kentucky, September 1986.

Haber, Sheldon E. "Participation in Industrial Training Programs." SIPP Working Paper No. 8813. Washington, DC: Bureau of the Census, U.S. Department of Commerce, 1988.

Hashimoto, Masanori. "Minimum Wage Effects on Training on the Job." American Economic Review 72 (December 1982):1070-1087.

Hill, Elizabeth T. "Effects of Postsecondary Technical Education on the Job." Mimeographed. Mont Alto, PA: Pennsylvania State University, Mont Alto Campus, 1988.

Hill, Elizabeth T. "Postsecondary Vocational Training in Pennsylvania--In School and on the Job." Mimeographed. Mont Alto, PA: Pennsylvania State University, Mont Alto Campus, 1987.

Hollenbeck, Kevin, and Richard Willke. "The Nature and Impact of Training: Evidence from the Current Population Survey." In John H. Bishop et al., Training and Human Capital Formation. Columbus: National Center for Research in Vocational Education, Ohio State University, 1985.

Lazear, Edward and Frederick Miller. "Minimum Wage Versus Minimum Compensation." in Report of the Minimum Wage Study Commission, vol. 5, Washington DC: U.S. Government Printing Office, 1981.

Lazear, Edward P., and Robert L. Moore. "Incentives, Productivity, and Labor Contracts." Quarterly Journal of Economics 99(May 1984): 275-296.

Leighton, Linda and Jacob Mincer. "The Effects of the Minimum Wage on Human Capital Formation." In Simon Rottenberg, ed., The Effects of Legal Minimum Wages, Washington DC: American Enterprise Institute, 1981.

Lillard, Lee A., and Hong W. Tan. Private Sector Training: Who Gets It and What Are Its Effects. Santa Monica, CA: The Rand Corporation, 1986.

Lynch, Lisa M. "Private Sector Training and Its Impact on the Earnings of Young Workers." NBER Working Paper 2872. Cambridge, MA: NBER, March 1989.

Medoff, James L., and Katharine G. Abraham. "Are Those Paid More Really More Productive? The Case of Experience." Journal of Human Resources 16 (Spring 1981):186-216.

Medoff, James L. "The Importance of Employer-Sponsored Job-Related Training." Mimeographed. Cambridge, MA: Harvard University, 1982.

Mincer, Jacob. "Job Training, Wage Growth, and Labor Turnover." Cambridge, MA: NBER Working Paper No. 2690, 1988.

O'Neill, June. "The Determinants and Wage Effects of Occupational Segregation." Mimeographed. Washington: The Urban Institute, 1983.

Tierney, Michael. "Employer-Provided Education and Training in 1981." In Robert Zemsky, Training's Benchmarks: A Statistical Sketch of Employer-Provided Training and Education: 1969-1981. Task I Report: The Impact of Public Policy on Education and Training in the Private Sector. Philadelphia: Higher Education Finance Research Institute, University of Pennsylvania, 1983a.

Tierney, Michael. "Trends in Employer-Sponsored Education and Training: 1969-78." In Robert Zemsky, Training's Benchmarks: A Statistical Sketch of Employer-Provided Training and Education: 1969-1981. Task I Report: The Impact of Public Policy on Education and Training in the Private Sector. Philadelphia: Higher Education Finance Research Institute, University of Pennsylvania, 1983b.

Topel, Robert H., and Michael P. Ward. "Job Mobility and the Careers of Young Men." Cambridge, MA: NBER Working Paper No. 2649, 1988.

U.S. Bureau of the Census. Census of Population: 1970, Subject Reports: Vocational Training. Washington, DC: U.S. Government Printing Office, 1973.

U.S. General Accounting Office. Youth Job Training: Problems Measuring Attainment of Employment Competencies. Gaithersburg, MD: U.S. General Accounting Office, 1987.

Zemsky, Robert. Training's Benchmarks: A Statistical Sketch of Employer-Provided Training and Education: 1969-1981. Task I Report: The Impact of Public Policy on Education and Training in the Private Sector. Philadelphia: Higher Education Finance Research Institute, University of Pennsylvania, 1983.

7b. EVIDENCE ON PRIVATE SECTOR TRAINING

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7b. EVIDENCE ON PRIVATE SECTOR TRAINING

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Hundreds of billions of dollars are spent annually in the United States on education and training by individuals, private companies, non-profit organizations, and governmental entities. That these sizeable expenditures exist and persist over time is prima facie evidence that the perceived benefits derived from the expenditures exceed the associated costs. The benefits to these expenditures accrue at multiple levels: to individuals in the form of enhanced earnings, greater employment stability, increased mobility and choice, greater occupational prestige, etc.; and to organizations in terms of enhanced competence, greater flexibility, increased competitiveness, and so forth. On a more grand scale, the quality of a nation's labor force is vital to its rate of economic growth and its progress toward economic development (Denison, 1974; Denison, 1979). This is always true, but it becomes imperative as a nation moves from an industrial age and into a post industrial or information age. This progression is visualized in Figure 1 (Mangum, Mangum and Kim, 1988).

Industrialization generally begins when productivity in the primary extractive activities of agriculture, fishing, and forestry rises above the subsistence level, freeing resources for manufacturing activities. Mining as an extractive industry is often a handmaiden of manufacturing. Manufacturing begins with simple products from simple production processes that are labor intensive and doable by unskilled labor. The products typically serve accessible domestic markets, often displacing previously homemade or imported goods. Basic electronic assembly, farmed out from developed countries in order to tap the cheaper labor of less developed countries, frequently joins textiles, clothing and shoes as characteristic of this early stage of industrial development. Upon meeting domestic need, export of labor intensive products to nations with higher labor costs or to nations still at the extractive stage of development helps finance necessary imports.

Early industrial development yields profits and wages above that possible in the extractive stage. The use of machinery becomes the key to further increases in both profits and wages. The natural step is into more capital intensive industries that process available natural resources into intermediate products. This step requires increased skills, primarily semiskilled labor. Intermediate products then become the raw materials for producing machinery and equipment for manufacturing, transportation, and communication as well as for basic consumer products.

The next way station is complex assembly. Household appliances, machine tools, consumer electronics, and automobiles characterize this stage. Capital intensiveness rises but so does the skill requirement. Volume production requires marketing and distribution systems that in turn create expanding forms of employment. Beyond complex assembly lies an emerging stage of exotic processes such as precision castings and genetic engineering contributing to the production of such items as specialty steels, fine ceramics, fiber optic cable, sophisticated lasers, integrated circuits, advanced aircraft engines, artificial human organs, and who knows what. This is a stage to which relatively few countries have thus far matured.

Progression through the stages of economic development is motivated from the front by a reaching out for greater profits, higher wages, and better living conditions. Nations on lower steps of the staircase try to advance by competing with that which they have available; often cheap labor. A nation can continue to compete where it is, or try to move up the staircase through a combination of more physical or human capital per worker. Apparent in this progression is that technological advance tends over time to reduce the relative importance, first of natural resources, and then of physical capital resources, and to continually elevate the importance of human resources. Each stage in the advance is built upon those that went before. Natural and capital resources are always necessary--they never become unimportant--but human resources become increasingly critical.

Technology is frequently thought of in terms of machines. This is both unfortunate and incorrect. Technology is knowledge, skills and ideas embedded in machines, in institutions and in systems (Marshall, 1988). Technology is the product and result of human innovation, human imagination, and human effort. In the emerging information age the relevant technology is composed of thinking skills: the abilities to communicate, to analyze data, to function in groups, to problem solve, to critically evaluate, to learn, and the flexibility to endure and produce change.

As economic growth becomes more dependent on the rate of human resource development, economic policy must increasingly be coordinated with (and focus upon) human resource policy in order to be effective. Because of their nature, the acquisition of these higher order thinking skills requires the involvement of both school based and workplace based learning. While the focus of this paper is the exploration of specific issues related to private sector skill development, this focus is best obtained in the context of a brief review of the institutions that compose our system of human resource development.

I. The American Education and Training System

The American education and training system is composed of a diversity of institutional providers and instructional settings. Description of the system (enrollments, funding levels and other characteristics) is challenging due to the multiplicity of funding sources, overlapping constituencies, and the extensive interrelationships across institutions which make clear delineation of where one institutional provider begins and another ends difficult to assess.

One way of adding some clarity to the institutional picture is to view the providers of employability and skill development along the dimensions of age and "ability" (Figure 2). These descriptors, particularly that of ability, are introduced solely for pedagogical purposes and are not to be interpreted narrowly. While Figure 2 involves a large amount of simplification and certainly does not include all institutional sources of employability development, it does visually demonstrate the diversity of institutions in the American education and training system.

Employability and skill development begin in the home with the interaction of parents, siblings and extended family. These life experiences are supplemented by neighbors, friends, and community. Public and private elementary and secondary schools are fundamental to the development of employability skills from childhood to young adulthood. Part time, summer, and intermittent employment while still in school also provide important learning experiences.

Of the approximate 75 percent who complete a high school education, three in five enter a college or university, and about one half of those that enter graduate (Levitan, et al., 1986). Some continue to further university training at the post-graduate or professional degree level. Those not exposed to college education for qualifying training may emerge directly into the workforce for on the job preparation or may potentially be served by a variety of institutions including: technical institutes, non-collegiate vocational schools, proprietary schools, apprenticeship, the military, and federal employment and training programs such as those authorized under the Job Training Partnership Act (JTPA). A sense of the magnitude of the education and training system, both in terms of expenditures and enrollments, is given in Table 1. Drawn from multiple sources, the figures cited undoubtedly both overlap and leave some gaps. While these figures should not be regarded as definitive statements of expenditure and enrollment levels, they do indicate the vastness of American education and training activities.

Beyond those institutions whose major function is the provision of employability and job skills lies a world in which occupational skill development is mixed with or motivated more directly by production activity. This is the realm of employer provided training which is "by almost any definition, no less a segment of the nation's education system than our colleges, universities, technical institutes,..." (Schwaller, 1980). Employer provided training constitutes a complex array of training options with skill development occurring in a variety of formats: informal on the job training, structured on the job training, in-plant classroom based training, external classroom training, and so forth (Mangum, 1984; Mangum and Mangum, 1985).

While there are significant flows of people and dollars between employers and institutions of skill development as organizations, workers, and government invest in qualifying and upgrading training, these flows are frequently difficult to quantify. In the case of on the job training, training is co-produced with the output of good or service. It becomes problematic to discern the distribution of expended time, equipment, and financial capital between the joint activities of training and production. Informal training (learning by watching others, casually sharing insights as to "easier ways," responding to supervisor suggestions, etc.) is even more difficult to assess. A later section of this paper will indicate that existing estimates of the volume and dollar value of such training are suspect.

Figure 2 suggests a number of points that should be underscored. First, as already mentioned, is the diversity of institutions involved in employability and skill development in the American system. A second point is the distinction between the mainstream system and the system of largely government sponsored remedial education and training efforts referred to in the figure as the "second chance" system.

A third point is recognition of the variety of institutions involved in providing services to those who do not attend college after completing high school or those that fail to complete high school. These individuals have been referred to elsewhere as the nation's "forgotten half" (William T. Grant Commission, 1988), those likely to miss out on what the Commission calls "the striking correlation between educational attainment and employment and earnings." Their numbers and the barriers they face are alarming. For example, the Bureau of Census estimates that some 13 percent of Americans are functionally illiterate, including 6 percent of high school graduates. Nearly 14 percent of the nation's 18 to 21 year-olds have left school prior to high school graduation (Bureau of Census, 1986).

A fourth and final point suggested by Figure 1 is the need to view employability and skill development from the perspective of a lifelong process. Whether labeled lifelong learning, career education or something else; or viewed from an individual, employer, or public policy viewpoint; employability and skill development is a process of becoming rather than a state of being.

II. What is Private Sector Training?

A first task in exploring private sector training is to identify, from within the broad array of institutions mentioned above, those providers that constitute the world of private sector training. On the surface, the most reasonable distinction would appear to be between employer-provided and non-employer provided training. However, problems arise with such a division.

One problem is delineation between the provider of the training and the entity paying for the training. For example, much of the training that employers pay for is in the form of services purchased from other entities, including public and private vocational schools, proprietary schools, community colleges, consulting firms, and the like. As a result, descriptions of the extent of private sector training can vary widely by whether the description is made on the basis of the provider of or the payer for the training. Further, for many non-employer training providers, tuitions do not constitute the full cost of training as training services are subsidized to varying degrees by tax dollars. Consequently, estimates of the dollar amount of employer purchased training may be misleading.

An additional problem in defining private sector training using the simple distinction between employer-provided and non-employer provided training is that many non-employer training providers are private entities. For example, approximately 76 percent of the noncollegiate postsecondary schools in the United States are proprietary schools while another 13 percent are non-public but operated on a not for profit basis (National Center for Education Statistics, 1988). These are all in the private sector as are the private colleges and universities which service a nontrivial percentage of all students at that level. Apprenticeship training is another example of this difficulty. Whereas apprenticeship training in many countries is an integral part of the government supported education system, American apprenticeship programs are predominantly industry based and operate on significant amounts of private funding from employers, unions, individual workers, or combinations of the three. Approximately 85 percent of apprenticeship programs in the United States are sponsored unilaterally by employers, 1 percent by groups of employers, and 15 percent by joint union-employer agreement (the largest in total number of apprentices trained) (Glover, 1980). American apprenticeship receives sizeable tax support however in that much of the "related instruction" component of apprenticeship is financed by vocational education funds allocated under the Carl Perkins Vocational Education Act.

The key point of this discussion is that the available literature has not narrowed in on an accepted definition of what constitutes private sector training and that there are good reasons for this dilemma of definition. One example may underline this point. One of the most thorough studies in this field to date is titled, "Private Sector Training: Who Gets It and What Are Its Effects?" (Lillard and Tan, 1986). Yet, on its first page the report proposes to "draw a broad picture of post school training in the United States". Private sector and post-school training seem to be used interchangeably in this and other cases, but not in all cases. These questions of definition become important as one seeks to compare alternative estimates of the volume of private sector training, its dollar value and its impact on individuals and society. In the following section, estimates are provided of the training expenditures of employer training isolated from the expenditures of other institutions providing training.

III. How Much is Spent on Private Sector Training?, How Much is Provided?, and Who Provides the Training?

Estimates of employer expenditures on training are few in number and vary widely in their magnitude. Isolating expenditures on employer-provided training is made difficult because of data limitations and the fact that much of the training paid for by employers is delivered by other entities. Further, many estimates of employer-provided training do not include costs such as the wage costs of trainees or supervisory personnel who serve as trainers, nor costs of increased equipment depreciation or increased output wastage due to training. Determination of the total dollar value of both employer-provided and total private sector training is complicated as a result.

Dollar Estimates on Private Training

The American Society for Training and Development (ASTD) estimates that in 1984 employers spent approximately $30 billion in direct costs for formal training that they either provided themselves or purchased from outside suppliers of training and that costs of employer-provided informal training range from $90 to $180 billion annually (Carnevale, 1986). Extrapolating from Dun and Bradstreet data, the magazine Training estimates that in 1986 U.S. firms with 50 or more employees budgeted some $32 billion to provide 1.2 billion hours of formal training to 38.8 million employees (Lee, 1987). Miller suggests that approximately $25 billion of the annual total spent on training by firms is spent on young workers at the entry level (Miller, 1988). While these figures are frequently cited, the calculations behind the estimates is uncertain. Other estimates made by extrapolating from the Survey of Participation in Adult Education or private surveys have produced significantly lower figures. For example, estimates based on a Conference Board survey of large employers plus extrapolations for small businesses yielded an employer training expenditure figure of $12 billion for 1984 (Lusterman, 1985). These estimates, 12 to 30 billion dollars in 1984, seem to define the range of reasonable estimates of employer based formal training.

Decomposing formal training expenditures by employers, Carnevale and Goldstein (1985) suggest that employers provide about 69 percent of their formal training in house and purchase approximately 31 percent of their formal training from outside providers. ASTD estimates that approximately 64 percent of purchased employer-provided training is purchased from schools while 36 percent is purchased from non-school entities (Table 2).

ASTD data maintain that the average training expenditure of firms is about 1 percent of payroll, but that training intensive firms frequently have training expenditures in the range of 3 to 4 percent of payroll (Carnevale and Gainer, 1988). A Bureau of National Affairs' Personnel Policy Forum survey of some 140 firms in 1984 reported median formal training costs per employee of $122 to $250 but the finding is based on a response rate of about 7 percent. A recent survey of firms by Delaney sets 1986 training expenditures at $350 to $1400 per employee but the overabundance of large firms in the respondent sample raise concerns about its representativeness (Delaney, et al., 1988).

Estimates from ASTD suggest that employers provided some 17.6 million formal courses to almost 15 million trainees in 1985 (Carnevale, 1986).

Significant amounts of training are purchased directly by adult workers according to analysis of the Survey of Participation in Adult Education (U.S. Census Bureau, 1987). In this supplement to the Current Population Survey, workers are asked if they received any training. If the respondent indicates they received training, they are asked who paid for the training. Expenditure data is collected on training paid for by the respondent or by family. Conceptually these data should not include training paid for by an employer or governmental unit, but it is unclear whether this is the case. For example, it is not clear how a respondent might treat training expenditures for which employer provided reimbursement was later received.

According to this source (Table 3), over 56 percent of worker purchased training is from schools, representing a 1985 annual dollar value of approximately $5.2 billion. About 55 percent of school supplied training is provided by colleges and universities, 27.5 percent by community colleges and technical institutes, 12.5 percent by vocational schools and 5 percent by elementary and secondary and other schools. Beyond school provided training, approximately 14.2 percent of purchased training is provided by professional, trade and labor organizations, 15.7 percent by the training industry, 3.2 percent by community organizations, 5.6 percent by government, and 4.7 percent by tutors, private instructors, and other providers.

There is some disagreement in the estimates of employer involvement in paying for school based training. Bishop, et al. (1985) find that employers pay for almost 19 percent of school based training. Carney (1985) finds that among Americans using education institutions to qualify for jobs, 8 percent had courses paid for by employers while in the case of upgrading training, employers paid for 41 percent of the courses.

The Extent of Private Sector Training

In the supplement to the January 1983 Current Population Survey, workers were asked a series of questions built around the following two basic questions: "Did you need specific skills or training to obtain your current (last) job?" and "Since you obtained your present job, did you take any training to improve your skills?" (Carey, 1985). Approximately 55 percent (53.9 million) of the workers employed in January of 1983 (97.3 million) reported needing specific training to qualify for their current jobs, while 35 percent reported the taking of training to improve their job skills once hired. Table 4 summarizes some of the findings of this study.

School programs and informal on the job training were identified by the respondents as the major sources of qualifying training received. Of the 28 million workers receiving their qualifying training in schools, about 8 percent attended training sponsored by employers and 3 percent took school based training sponsored by government. In contrast, nearly 5 percent of the 9.4 million workers receiving qualifying training in formal company training programs obtained this training in government sponsored company programs.

Of the approximately 34 million individuals reporting skill upgrading training on their current job, 40 percent received some training through informal on the job training. Schools and formal company training programs were also important sources for skill upgrade training. Of school based upgrading training, 41 percent was sponsored by employers and 3 percent by government.

Carey's findings that about 10 percent of all workers received formal qualifying or upgrading training from their employer is confirmed in other studies (Haber (1988), Lillard and Tan (1985), and Hollenbeck and Willke (1985)). Lillard and Tan report an estimate of 12 percent, while Hollenbeck and Willke estimate 11 percent. Both studies employ the same data set as Carey, the 1983 CPS. Haber, using the Survey of Income and Program Participation, reports 8 percent of all workers receiving formal training from their current employer. Estimates of the extent of informal on the job training as a source of qualifying and upgrading training across these studies varies more dramatically. While the Lillard and Tan estimate that 15 percent of workers received training from informal OJT and the Hollenbeck and Willke estimate of 14 percent are consistent with the Carey estimate of 14 percent for upgrade training, neither of these sources distinguish between qualifying and upgrading training and consequently, neither documents the Carey result that 28 percent of all employed workers report informal OJT as a source of the training needed to qualify for their job.

Variations in Employer Training by Industry

Data from the Survey of Participation in Adult Education indicate significant variation in employer based formal training by industry (Carnevale and Gainer, 1988). Such training is disproportionately present in industries with high concentrations of managers, professionals and technicians. In terms of training intensity (courses per employee), the mining, non-electrical machinery manufacturing, communications, utilities, hospitals, and banking sectors are high in formal employer based training. Using more narrow industry classifications, Bishop, et al. (1985) find financial services, wholesale trade, and manufacturing to offer the greatest amount of training.

Drawing on data from the Survey of Participation in Adult Education and other sources, The American Society of Training and Development has estimated training expenditures across various industries for 1984. On a per employee basis, ASTD estimates average per employee expenditures of $283, with above average expenditures in industries such as public administration ($645), mining ($566), and finance ($529); with below average expenditures in agriculture production ($54), construction ($127) and trade ($136). In total 1984 training expenditures, ASTD estimates expenditures to have been highest in services ($8700 million), manufacturing ($6450 million) and durable goods ($4710 million); and lowest in agriculture ($90 million), mining ($720 million) and construction ($720 million) (Carnevale, 1986).

Variations By Employer Size

There is considerable evidence of differences in training expenditures and practices by size of firm. Large employers provide more training than do smaller employers (Barron, Black and Loewenstein, 1987). Data from the Small Business Administration suggest that the relative importance of employer based training increases with firm size and that large employers are more likely to be the source of job specific training used by employees than are small employers (U.S. Small Business Administration, 1988; also see Haber, 1988; Bishop, 1982; Simpson, 1984). These data show that approximately 75 percent of employees who receive training in firms of fewer than 100 employees receive their training off the job, compared to 58 percent of employees receiving training in larger firms. Bishop et al. (1985) present evidence suggesting that comparisons of large versus small firms mask some variation. They find that investment in training is larger at both ends of the spectrum, with large firms of 200 or more employees and small firms of under 10 employees both devoting more time to training than medium size firms.

Consistent with this literature is evidence that larger firms are more likely to pay for training taken outside the firm than are smaller companies. Carnevale and Gainer suggest that employers with less than 100 employees pay for about 23 percent of training taken outside the firm while larger firms average 32 percent (Also see Haber, 1988). Large companies are more likely to conduct formal in house training programs than are smaller companies (Bureau of National Affairs, 1985). The proportion of employer based training purchased from outside providers appears to vary across firm size as well. Carnevale and Gainer (1988, p. 41) state that large companies buy approximately 40 percent of their formal training from outside providers and that the percentage of outside purchase increases as the size of the firm decreases. However, large firms make more extensive use of training consultants than do small firms, particularly in developing training programs. Similarly, larger firms make greater use of commercial training packages than do small firms (Bureau of National Affairs, 1985, p. 24).

IV. Who Receives Private Sector Training?

In 1986 males, comprised 55.5 percent of the workforce, but received 53.3 percent of the formal employer based training provided in the country. Perhaps because of being overrepresented among new entrants, women received 46.6 percent of such training while comprising 44.4 percent of the workforce. Minorities were disproportionately underrepresented in the receipt of such training. While blacks and hispanics comprised 9.5 percent and 5.5 percent of the workforce respectively, they received 5.1 percent and 2.7 percent of formal employer based training, reflecting in part the low level jobs to which they seem to have access. By age of training recipients, 67.6 percent of formal employer based training was provided to those workers between the ages of 25 and 44, and 82.4 percent to those between 25 and 54 years of age (U.S. Census Bureau, 1987).

To explore factors influencing the likelihood of participation in post-mandatory schooling forms of skill development, a number of studies have employed data sets with detailed information on individual respondents. These studies typically indicate significant differences in post school training participation by race and sex. Adams et al. (1987), using a sample from the NLS Young Mens cohort, look at training participation at two points in the lifecycle and find black males to be significantly less likely to participate in training than white males. Lynch (1988), using data from the NLS Youth cohort, separates the post school training data into three types: 1. on the job (company) training; 2. training received outside the firm from business, vocational and technical schools, nursing programs, barber schools, and correspondence courses; and 3. apprenticeships. Estimating the probability of participation in each of the three settings, she finds off the job training to be the major source of the training received and women and nonwhites to have a significantly lower probability of receiving on the job training than do white men. These results are supported elsewhere for nonwhites, but are occasionally questioned for women (Lillard and Tan, 1986; Rumsberger, 1984; Flanagan, 1974). In Lynch's work, participation in company training is found to be concentrated among white, married, and unionized males with significant years of work experience (See Delaney, et al., 1988 and Lillard and Tan, 1986 for further support of the union effect mentioned here). The probability of receiving off the job training is lower for males than females and decreases with work experience (Lynch, 1988; Lillard and Tan, 1986).

Racial differences appear in training participation by occupational type of training as well as by institutional source. For example, nonwhite males are frequently found to be less likely to participate in managerial or professional/technical training than are their white counterparts (Lillard and Tan, 1986; Adams et al., 1987).

Among the factors influencing the likelihood of receiving post school occupational training, formal educational attainment stands out in the literature as of major importance. Lillard and Tan (1986) find that the probability of receiving occupational training in either an off the job or on the job setting increases with formal schooling. They find that individuals with two years of post school formal education are 20 percent more likely to get training on the job than are those with only a high school education. Further, college graduates are 50 percent more likely to receive such training than are high school graduates and individuals with more than 16 years of formal schooling are 30 percent more likely to receive on the job training than are those with baccalaureate degrees. Adams, et al. (1987) find formal educational attainment to be a much stronger predictor of subsequent participation in post school occupational training for black males than for whites while Lillard and Tan find schooling effects to be smaller for women than for men.

Geographical region and proxies for local and national economic conditions are among the other variables most frequently identified as affecting participation decisions. Adams et al. (1987) conclude that residence in metropolitan areas and residence in the non-South as opposed to the South are associated with a higher likelihood of training participation. In Lillard and Tan (1986), training participation is lower in the South, higher in the West, and training outside the firm is more likely in years of high national unemployment. Interestingly, the likelihood of company training for members of the NLS Young Men's cohort falls with rising national unemployment rates but increases for members of the NLS (mature) Men's and Women's cohorts. This suggests significant amounts of upgrade training during slack economic conditions.

The amount of training an individual receives appears to vary widely by occupation. A number of surveys, often using data from large private companies such as the Fortune 500 list, have explored the occupational incidence of private sector training. Table 5 summarizes some findings from two of these studies. In these studies, investment on a training dollar per employee basis is frequently highest in executive training--in one study absorbing 12 percent of the training budget while executives comprised only .75 percent of the total employees on average (Stephan et al.). Another recent survey of 495 U.S. business units found training expenditures per employee to be higher for managers, professionals, and technical workers than for clerical, manufacturing or production workers (Delaney, et al., 1988). Sales personnel typically receive the greatest number of annual hours of formal training according to most of these surveys (Lee, 1987).

The institutional source of training also appears to vary by occupation and by whether the training is for skill qualification as opposed to skill upgrading. The most complete explorations of these issues come from data in a supplement of the 1983 Current Population Survey (Carey, 1985). The data suggest significant differences in the amount of both qualifying and upgrading training across occupations. Both qualifying and upgrading training were most prevalent among professional, technical, and managerial workers. Qualifying and upgrading training were least common among laborers, service workers, and transportation workers. Informal on the job training was the most common source of qualifying training in 10 of 15 occupational groups (professionals (technical and nontechnical), technicians, managers and clerical personnel being the exceptions) and for upgrading training in 11 of 15 occupational groups (clerical personnel being the one change). Workers in the repair, craft and precision production occupations were more likely to acquire qualifying training in formal company programs than were those in any other occupational classifications. Be it qualifying or upgrading training, managerial workers were more likely to receive their training from employers than were professional or technical workers. This is consistent with the characterization of managerial training as being more firm specific in nature than either professional or technical skills (See Lillard and Tan, 1986, p. 34).

In summary, minorities are significantly less likely to receive post-school forms of education and training than are white males. These differences have held up even when controls for selection bias have been introduced in the analysis. The literature is more mixed on the issue of gender differences in training participation, with women apparently more likely than men to receive training from non-employer sources, but less likely to receive on the job training (particularly informal OJT). Differences in participation rates by race and sex appear most pronounced in company provided training (when training is proxied by institutional provider) and in professional and managerial training (when training is proxied by occupational type). These are the types of training often cited as offering the highest rates of return.

Further, the likelihood of receiving post school training rises with the level of formal educational attainment. This is particularly true for blacks. The literature suggests that those acquiring skills early in the lifecycle in formal settings are more likely to have access to additional training later in the lifecycle.

V. What is the Impact of Private Sector Training on Wages and Wage Growth?

There is more agreement than disagreement among studies investigating the returns to post high school occupational training. These studies have used data from a variety of data sources including: the Current Population Survey, the Panel Study on Income Dynamics, the Employment Opportunities Pilot Projects Surveys, and different cohorts of the National Longitudinal Studies of Labor Market Experience. As inferred earlier, clearly distinguishing private from non private sector training in these studies is often difficult.

Among providers of post high school occupational training, company provided training is consistently identified as producing the greatest wage or earnings effect relative to individuals in the samples who did not participate in any formal postschool training. These wage and earnings impacts have been documented to be in the range of 10 to 30 percent depending on the data base used, the controls employed and the dependent variable of analysis (Bishop, 1982; Bishop, et al., 1985; Lillard and Tan, 1986; Mangum and Adams, 1987; Rumsberger, 1984).

Lillard and Tan find a 27 percent wage effect associated with company training in CPS data and a 16 percent earnings effect using NLS-Young Mens cohort data. They use the richness of the NLS to estimate the duration of the training effect and find the average company training effect to persist over 13 years. Barron et al. (1989), using a uniquely detailed data set, are able to document on the job training in several forms (formal OJT, informal OJT with supervisors, informal OJT with coworkers, learning by watching, etc) across a sizeable number of firms. They find that, on average, a 10 percent increase in the amount of OJT received raises wage growth by 1.5 percent. In several studies, completion of company provided training is associated with enhanced occupational prestige and a lower probability of unemployment than that experienced by members of comparison groups (see Mangum and Adams for an example).

Results have been somewhat more mixed for other training providers (Bishop, et al., 1985). Findings on nondegree training from academic institutions has shown earnings differentials of 0 to 8 percent with a duration of positive earnings effects of about 8 years (Lillard and Tan, 1986). Results for correspondence schools has been equally mixed, with positive returns more frequently recorded when hourly wage is used as a dependent variable rather than annual earnings (Mangum and Adams, 1987). Participation in training provided by business and technical institutes has resulted in earnings effects in the 8 to 12 percent range, with positive impacts enduring over approximately a 10 year horizon (Lillard and Tan, 1986; Freeman, 1974; Mangum and Adams, 1987). Informal on the job training has been associated with wage effects in the 0 to 5 percent range (Lillard and Tan, 1986).

Lynch (1988) collapses the available training data somewhat differently than most other studies, distinguishing between apprenticeship, on the job company training and off the job training and between training received from the current employer as opposed to training received prior to the current employer. She finds that prior participation in apprenticeship or off the job training positively influence wage rates with the current employer, but that prior on the job training is not on average portable for the workers in her sample. Further, she finds weeks of apprenticeship training (and on the job training) with the current employer to carry positive wage effects while off the job training has no significant impact on wages with the current employer.

Proxying training by the occupational area in which training is received, the literature suggests earnings impacts in the 14 to 20 percent range for participants in professional, technical, or managerial training in comparison to similar individuals not participating in training (Lillard and Tan, 1986; Rumsberger, 1984; Mangum and Adams, 1987). Skilled manual training typically carries a 5 to 9 percent rate of return (Lillard and Tan, 1986), while the returns to clerical training often appear as a lower probability of experiencing unemployment or a higher level of occupational prestige, rather than significantly higher wage rates (Mangum and Adams, 1987). While professional, technical, and managerial training are also typically associated with higher occupational prestige and lower incidences of unemployment, participants in skilled or semi skilled manual training are sometimes found to have a higher probability of experiencing unemployment than are individuals receiving no formal training beyond formal education (Mangum and Adams, 1987). These may reflect seasonality or the recent displacement sensitivity of such jobs. Conversely, those studies that have sought to look at the duration of the earnings impacts associated with participation in post school occupational training, suggest impacts lasting 11 to 12 years for professional, technical, and managerial training, 15 years for skilled manual training, and about 7 years for clerical and other training (Lillard and Tan, 1986).

Some attention has been given in the literature to the possible influence of firm size on the magnitude of the wage effects associated with participation in training. Among the theoretical justifications for such investigation is the assumption that differences in employee monitoring costs will motivate larger firms to hire a higher quality workforce on average than will small firms, or the assumption that large firms engage in more firm specific training than do smaller firms. Both assumptions have implications for differences in wages by firm size. A number of studies have found wage growth to be higher in small firms than in larger firms (Barron, Black and Loewenstein, 1987; Schiller, 1982). Recent work, using data from the Survey of Income and Program Participation, finds wage growth to be higher in large firms but suggests that when differences in personal characteristics are controlled, workers in large and small firms experience near identical rates of wage growth (Haber and Lamas, 1988; Keeley, 1984).

Underinvestment?

A number of arguments have been advanced suggesting that employers and workers may invest in an amount of training that is less than optimal from a societal perspective. Some of the arguments supporting this view are conveniently summarized in Bishop et al. 1985:

a. Since some portion of most on the job training is portable to multiple work settings, employers may be discouraged from heavy investment in the skills of the individual due to the risk of lost investment.

b. Wage regulations such as minimum wage laws may prevent employers from downwardly adjusting training wages sufficiently to capture the costs of investment in people. In the absence of such flexibility, employer willingness to invest in OJT may be diminished (Hashimoto, 1982).

c. Because employers have difficulty properly evaluating the quality of OJT received on previous jobs, workers may tend to be less than fully compensated or on the job training received in previous employment. This may discourage employee investment in on the job training.

d. Capital market barriers to borrowing for human capital investment in general and OJT investment in particular may constrain such investment overall.

e. Since individuals and firms undertake human capital investment based upon their implicit individual calculations of the associated benefits and costs, these decisions may occur without factoring in external benefits that accrue to society as a whole. The underinvestment argument suggests that for these reasons less than desirable quantities of human capital investment (such as OJT) may be produced in the absence of public policies to subsidize the activity.

VI. What are the Productivity Impacts of Private Sector Training?

Literature on the productivity impacts of participation in training is scarce. The collection of such data through employer survey is difficult, both in terms of operationally collecting meaningful data and because firms are often protective of such information. Further, until only recently most investigations of the returns to training have accepted the economic assumption that productivity increases due to training are reflected in the market wage rates commanded by those receiving training, and that wage effects are consequently a reasonable proxy for productivity effects (Medoff and Abraham, 1981).

Work by John Bishop and others, based on a data set drawn from telephone interviews with over 3800 employers nationwide for the National Center for Research in Vocational Education, is the source of most of our understanding on this topic. Bishop finds that wage rate growth due to training is much smaller than productivity growth due to training. Bishop estimates that on average, and cutting across all reported on the job training, one hundred additional hours of on the job training increases productivity by 10 to 20 percent, whereas the impact on observed wages is 2 to 6 percent. Bishop suggests that about one third of productivity growth occurs in the first three months on the job. In low skill jobs, productivity growth occurs at a slower rate than this beyond the first three months, while in high skill jobs the rate of productivity growth increases after the first three months. Bishop documents some interesting differences in productivity growth by firm size. In addition to finding a positive association between productivity growth and firm size, he ranks different training techniques on the basis of the rate of return in terms of productivity growth. He finds that in small firms (100 employees or less) informal on the job training by other employees offers the highest rate of return, followed by informally watching others, informal on the job training by management, and finally, formal training by management. Interestingly, the order is reversed in the case of larger firms (Bishop, et al., 1985).

VII. Policy Issues and Options

The mass production world of industrial society required a relatively small number of workers with the theoretical tools acquired in post high school training. In the plant, apprenticeship provided the broad training needed in the crafts and in maintenance. Beyond, the need was for semi skilled operatives trained on the job for immediate tasks and to meet the incremental demands imposed by technology. The workplace was hierarchial and fractionalized. Detailed rules were imposed by management and collective bargaining protected the workers from arbitrary application of managerial rights. In the event technological change was more than incremental in nature, retraining was the norm in unionized settings while rehiring was the norm in non-union settings.

Public policy supported the system through the provision of retraining. The Manpower Development and Training Act of 1962 is perhaps a best example. Experience with the persistently unemployed soon taught, however, that those to be served needed remedial education in the classroom. Remedial education was needed not in order to do the job but in order to take the training needed for the job. Remedial basic education became institutionalized in the second chance programs of the late 60s, 70s and the 80s (Mangum, 1969; Mangum and Walsh, 1973; Levitan and Mangum, 1981).

Today, we are rapidly moving through the post industrial or information age. Forces of international competition have increased the demand for information technologies which in turn have tended to replace the demand for economies of scale that characterized the industrial age. Information technology is unique from the technology of the industrial age in two significant ways. First, it requires a different mix of and a more advanced level of basic employability skills than those needed in the industrial age (Carnevale, Gainer, and Meltzer, 1989). As a result, the workplace is now demanding a higher entrance level of employability skills than the schools have historically been asked to provide. Demographics have further clouded the horizon. Our population is aging and our labor force is becoming more minority and female dependent.

Second, information technology cannot easily be produced by standardized means. It is more fluid and more quickly evolving. Such technology must be developed and marketed rapidly if economic rents from comparative advantage are to be exploited. In an international economy characterized by rapid diffusion of information across the globe, comparative advantage disappears more quickly today than in times past. As a result, leading edge technology is increasingly developed in the workplace.

Employers have responded to these trends in a number of ways. First, business has complained about the schools and their seeming inability to deliver the product. Second, some firms have pursued cooperative efforts to assist and support the schools. "Support a school" programs and competency programs are examples (Committee for Economic Development, 1987). Third, employers have instituted in house programs of workplace literacy to supplement the schools in providing the basic employability skills that are the foundation of the higher order skills required by the information age (Rosow and Zager, 1988). Finally, firms are increasingly becoming learning institutions. They spend billions on training; a number of companies offer college degrees from their in house programs.

Movement into the information age requires a reassessment of the responsibilities and roles of individual, school, employer, and government as these responsibilities and roles relate to human resource development. While such a reassessment is beyond the scope of this particular paper; a call for such a reassessment is not. As presented in greater detail above, the directions of change in employability and skill requirements is very clear. An information society is more reliant on human capital than was either the agrarian or industrial societies that preceded it. What is unclear as we look ahead is the pace and volume of change that will occur. Experience has shown us that there is a tendency to overestimate the pace at which such changes emerge. Careful, precise research is needed to document the pace at which the forecasted changes are occurring in our world of work. Since it is probable that the pace and volume of change are not of the crisis proportions that some would suggest, what are needed are well conceived long run policies to address the issues as opposed to policies bred from a sense of crisis. It is within the mandate of the Commission on Workforce Quality and Labor Market Efficiency and similar efforts, to push toward a synthesis of findings and the emergence of a coordinated plan of action.

It is in this context that the following policy issues are presented. The focus is on issues of supporting and extending efforts in private sector training that seek to improve this nation's ability to act and to compete in the information age. The issues presented flow from the literature reviewed in this paper. The options are those conceivable but do not necessarily reflect the literature reviewed here. The policy options presented are just that; they are only options. Recommendations can emerge only after detailed analysis of experience in these areas and exploration of the likely impacts of policy movement in these alternative directions.

Issue #1. The Extent of Private Sector Training

We know surprisingly little about private sector training, particularly about employer provided training, and most specifically about informal on the job training. Estimates of employers' annual expenditures on training are of questionable accuracy given the looseness of the methodologies from which these estimates have been derived. Most of our knowledge of private sector training comes from asking individuals about the extent and nature of any qualifying and upgrading training in which they may have participated. Precious little of our understanding is derived from information received from employers. Even given access to employers, on the job training, and particularly the informal variety, is difficult to measure with precision.

Private sector training may be of sufficient policy importance today to justify initiation of a systematic data collection effort. A key question is whether that interest will continue in the future. To the extent that data collection from employers is warranted, the survey instrument developed by John Bishop and others at the National Center for Research in Vocational Education for their 1984-85 employer survey should serve as a departure point. It is composed of the type of questions needed to obtain measurement of the extent, cost, and productivity impacts of employer provided training. The survey and the sampling design would need to be expanded to yield a more representative look at all types of employer provided training.

Issue #2. Access to Training

The findings reviewed here suggest that continued efforts should be made to "understand the private market processes which generate the bulk of the economy's training opportunities and with which the government must coordinate" (Parsons, p. 187). It should always be remembered that jobs create training opportunities; training does not create jobs (Seninger, 1988).

That females and minorities are significantly less likely to receive post-school forms of education and training than are white males, that this is particularly true of company provided training which typically offers very sizeable rates of return, and that these differences have held up under sophisticated econometric controls for selection bias, suggests that continued effort to understand forces behind racial and gender differences in training participation is warranted. An apparent key in this investigation is gaining an understanding of the complex reasons behind racial differences in educational attainment and achievement early in the lifecycle and the link between these differences and post-school investment decisions by individuals and employers.

Among the policies that may improve access to private sector training are:

i. Efforts to keep young people in school, particularly those with significant "at risk" characteristics (Committee on Economic Development, 1987).

ii. Continued enforcement of Affirmative Action laws and active promotion at the organization level of efforts to improve the representation of minority groups in positions receiving significant amounts of training.

iii. Continued support and development of a viable second chance skill development system that a. assists those who fail in or who are failed by the mainstream education system by preserving individual access to and incentives for participation in quality skill development activities (Berlin and Sum, 1988) and b. which targets such assistance on the truly disadvantaged (Levitan and Gallo, 1988). The literature reviewed here raises the possibility (still needing further investigation) that the private training market, when left to itself, acts to reinforce rather than erase economic and social inequalities that emerge early in the lifecycle.

While some improvement in access to training for all groups in our society should occur naturally as market mechanisms respond over time to the increased presence of minorities and women in the labor force, our ability to compete in a global economy and respond to today's challenges may be increased by proactive efforts in these areas.

Issue #3. Underinvestment in Training

The popular press seems replete with calls for renewed emphasis on human capital investment. As one example, BusinessWeek entitled its September 19, 1988 issue "Needed: Human Capital." This report concludes that "investments in education and training will yield sure fire returns we can't afford to ignore." The calls have found political footholds. President Bush reflects this emphasis in his desire to be "the education President." Curiously however, the available rate of return literature does not generally document rates of return to all forms of post-school occupational training that seem tremendously above normal. For example and as cited earlier, Lillard and Tan document rates of return in the five to nine percent range. While rates of return do seem above normal in some cases, such as in some studies of employer provided training, the picture is less than clear. However, in reviewing the rate of return literature it must be remembered that there are a number of theoretical arguments (see Section V of this report) which lend support to the underinvestment hypothesis by suggesting that employers and workers invest in an amount of on the job training that is less than optimal from a societal perspective. These arguments suggest that social rates of return to different types of human capital investment may deviate significantly from private rates of return.

Additional research in this area is warranted. Much of the rate of return literature cited in this report is somewhat dated at this point. Private rates of return may have increased in recent years. Further, many of the studies reviewed report earnings impacts instead of rates of return. For both reasons careful documentation of current rates of return to different forms of private sector human capital investment are currently warranted. Beyond this, careful investigation of the validity of the underinvestment arguments is needed in attempt to document the relevant social rates of return to the different forms of private sector human capital investment.

To the extent that underinvestment in private sector training is shown to exist, the following are some possible options for increasing the extent of such training that are worthy of additional policy research.

1. Increasing the rate of return to employer provided training by lowering turnover in jobs offering quality on the job training through:

i. Education of young jobseekers to factor issues such as access to training opportunities into their job search. This might involve providing career counselors with information on the training reputations of local firms and age earning profiles of various careers, in addition to information on starting salaries.

ii. Education of firms to recognize the costs involved in providing quality on the job training thereby providing firms with incentives to invest in improved hiring selection techniques that will result in improved job matches and lower turnover.

2. Promoting certification of employer provided training in order to document the quality of such training and improve the market's ability to value on the job training. Some strategies consistent with this objective would be:

i. Encouragement of firms to certify competencies learned in firm-provided on the job training programs so as to increase the visibility of and commitment to training within the firm and to facilitate skill documentation across firms.

ii. Exploration of the feasibility of industry wide competency standards as a prelude to industry wide skill certification systems.

3. Investigating the subsidization of employer provided formal training through tax credits based on measures such as qualified increases in employer training expenditures. Questioning of much of firm provided on the job training is portable from employer to employer raises concerns about using this strategy to encourage the training of young workers. Additionally, the difficulties in measuring informal training suggest it would be even more problematic to subsidize.

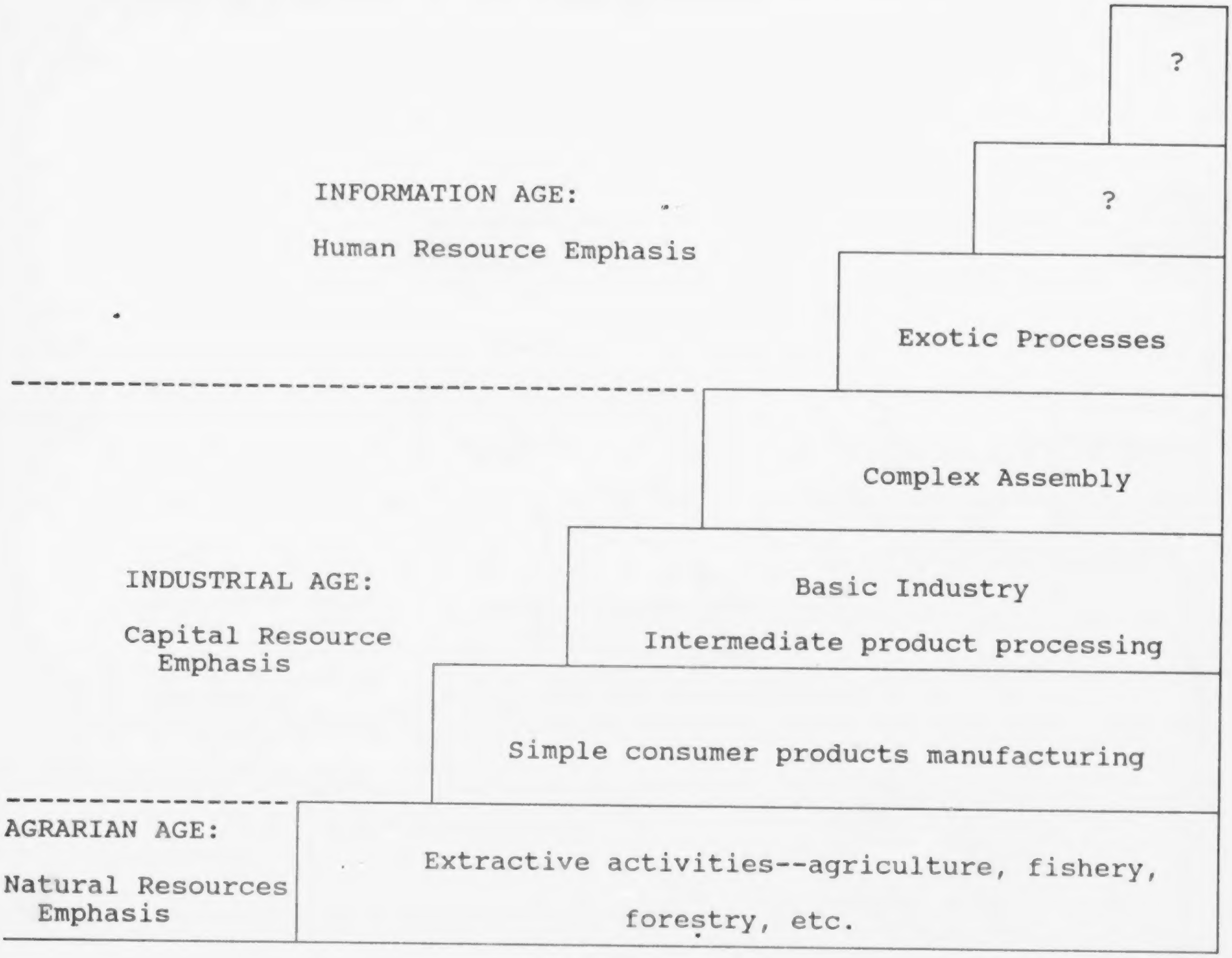
?
?
INFORMATION AGE:
Human Resource Emphasis
Exotic Processes
Complex Assembly
INDUSTRIAL AGE:
Capital Resource Emphasis
Basic Industry
Intermediate product processing
Simple consumer products manufacturing
AGRARIAN AGE:
Natural Resources Emphasis
Extractive activities--agriculture, fishery, forestry, etc.

Figure 1: Stages in Economic Development

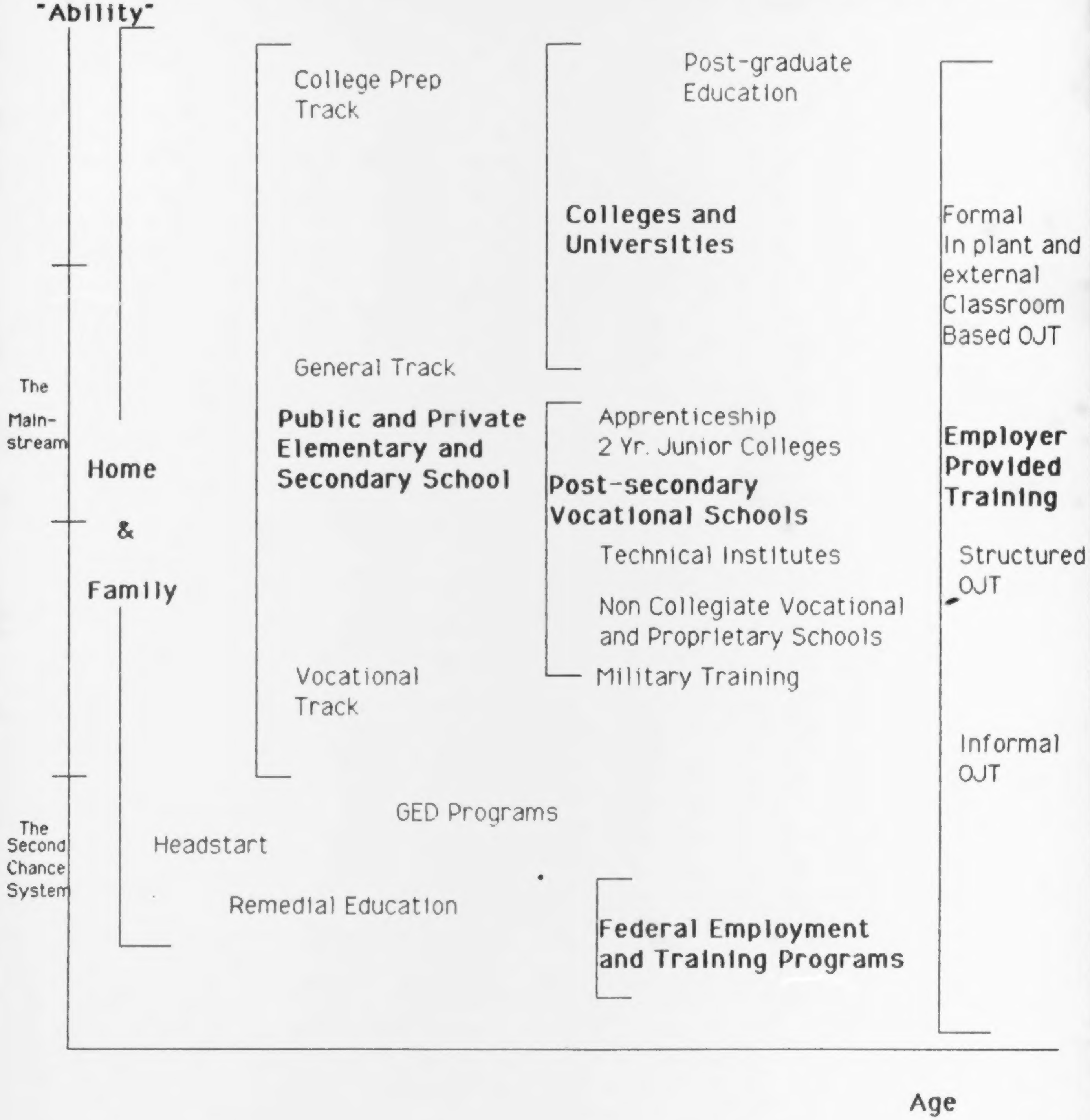
"Ability"
College Prep
Track
Post-graduate
Education
Colleges and
Universities
Formal
In plant and
external
Classroom
Based OJT
General Track
The
Main-
stream
Public and Private
Elementary and
Secondary School
Apprenticeship
2 Yr. Junior Colleges
Employer
Provided
Training
Home
&
Family
Post-secondary
Vocational Schools
Technical Institutes
Structured
OJT
Non Collegiate Vocational
and Proprietary Schools
Military Training
Vocational
Track
Informal
OJT
GED Programs
The
Second
Chance
System
Headstart
Remedial Education
Federal Employment
and Training Programs
Age

Figure 2: Institutions of Employability Development

Table 1
The American Education and Training System: An Overview

	Expenditures	Enrollment
Public/Private Elementary and Secondary Education	161 billion	46 million
Federal Program Funding:		
Head Start	1.25 billion	447,000
Compensatory Education	4.57 billion	5.2 million
Handicapped	2.00 billion	4.5 million
Vocational Education	918 million	NA
Native American	340 million	284,000
Bilingual Education	197 million	230,000
Post-Secondary		
Universities and Colleges	105 billion	12.4 million
Apprenticeships	NA	4-600,000
Military	17.6 billion	
Veterans Programs	598 million	NA
JTPA	3.7 billion	2.1 million
Vocational Rehabilitation	1.7 billion	924,000
Adult Education		
Federal appropriations	162 million	
State appropriations	175 million	
Federal Program Funding:		
Pell Grants	4.5 billion	2.9 million
Guaranteed Student Loans	3.2 billion	3.5 million
College Work Study	610 million	753,000
Supplemental Educational Opportunity grants	438 million	720,000
Trio programs	219 million	525,000
Perkins loans	205 million	880,000

Sources: All data for 1985-1986. U.S. Department of Commerce, Statistical Abstract of the United States 1988, U.S. Government Printing Office, 1987; Sar A. Levitan and Frank Gallo, "Uncle Sam's Helping Hand: Educating, Training and Employing the Disadvantaged," in New Developments in Worker Training: A Legacy for the 1990s, Industrial Relations Research Association, forthcoming; Department of Defense, Military Manpower Training Report FY1989, Washington D.C., 1988; U.S. Department of Labor, Bureau of Apprenticeship Training, Apprenticeship: Past and Present, U.S. Government Printing Office, 1987; U.S. Department of Labor, Occupational Projections and Training Data, U.S. Government Printing Office, 1986.

Table 2
Sources of Employer Purchased Formal Training
(Percentages)

Schools	63.5	
Four year colleges and universities		34.9
Elementary and high schools		1.0
Two year colleges and technical institutes		18.6
Vocational and trade schools		6.8
Other		2.1
Nonschools	36.5	
Government		4.4
Professional associations and labor organizations		12.6
Tutors		3.8
Business firms		14.0
Community Organizations		1.6

Source: Anthony Carnevale, "The Learning Enterprise," Training and Development Journal, Volume 40, Number 1, 1986.

Table 3
Formal Training Purchased by Adult Workers, 1985

Provider	Share of Purchased Training	Dollar Value
Schools	(56.4)	5,245 million
Elementary and secondary	1.5	139.5 million
Community colleges and technical institutes	15.5	1,441.5 million
Colleges and universities	31.2	2,901.6 million
Vocational schools	7.0	651.0 million
Other schools	1.2	111.6 million
Professional, trade, and labor organizations	14.2	1,320.0 million
Training industry	15.7	1,460.0 million
Community organizations	3.2	297.6 million
Tutors and private instructors	1.2	111.6 million
Government	5.6	520.0 million
Other	3.5	325.5 million

Source: U.S. Census Bureau, Survey of Participation in Adult Education, Washington, D.C.: U.S. Government Printing Office, 1987, as reported in Carnevale, Anthony P. and Gainer, Leila J., "The Learning Enterprise," American Society for Training and Development and The U.S. Department of Labor, draft manuscript, October 1988.

Table 4
Sources of Training Reported by American Workers

Source of Qualifying Training	Number Identifying Source (millions)	Percent Identifying Source	
		(a)	(b)
School	28.1	52.1	28.9
Formal Company Programs	9.4	17.4	9.7
Informal On the Job Training	27.0	50.0	27.7
Armed Forces	1.9	3.5	2.0
Correspondence Courses	.8	1.5	1.0
Friend or Relative	3.2	5.9	3.3
Source of Upgrading Training			
School	11.4	33.6	11.7
Formal Company Program	10.6	31.3	10.9
Informal On the Job Training	13.6	40.2	14.0
Other	4.3	1.3	.4

Source: Carey, Max, U.S. Department of Labor, How Workers Get Their Training, Washington D.C.: U.S. Government printing Office, 1985.
(a) value in first column as percent of total number of workers reporting needing some training for their job (53.9 million).
(b) value in first column as percent of all employed workers in survey (97.3 million).

Table 5
Employer Provided Training by Employee Classification

Classification	Average Percent Distribution of HRD Budget	Average Hours of Formal Training Per Year
Executive	12.2	36.3
Senior Management	NA	33.6
Middle Level Management	22.4	36.6
Professional	NA	35.8
First Line Supervisory	21.8	33.3
Sales	15.9	42.6
Administrative	NA	21.8
Customer Service	NA	26.8
Production	NA	29.1
Clerical	6.0	16.9
Technical	18.5	NA
Other (safety, hourly)	3.0	NA

NA: category not included in survey. Source: Lee, C., "Where the Training Dollars Go," Training, Volume 24, October 1987; Stephan, E., et al., "HRD in the Fortune 500," Training and Development Journal, Volume 42, January 1988.

REFERENCES

Adams, Arvil V., "The Stock of Human Capital and Differences in Post-School Formal Occupational Training for Middle Aged Men," Southern Economic Journal, April 1978.

Adams, Arvil V., Mangum, Stephen L., and Wirtz, Philip W., "Postschool Education and Training: Accessible to All?," Review of Black Political Economy, Volume 15, Number 3, Winter 1987.

Barnow, Burt S., "The Education, Training, and Work Experience of the Adult Labor Force from 1984 to 1995," National Commission for Employment Policy, RR-85-10, June 1985.

Barron, John M., Black, Dan A. and Loewenstein, Mark A., "Employer Size: The Implications for Search, Training, Capital Investment, Starting Wages, and Wage Growth," Journal of Labor Economics, Volume 5, January 1987.

Barron. John M., Black, Dan A., and Loewenstein, Mark A., "Job Matching and On-the-Job Training," Journal of Labor Economics, Volume 7, Number 1, 1989.

Berlin, Gordon and Sum, Andrew, Toward A More Perfect Union: Basic Skills, Poor Families, and Our Economic Future, New York: Ford Foundation, 1988.

Bishop, John H., The Social Payoff for Occupationally Specific Training: The Employers' Point of View, Columbus: National Center for Research in Vocational Education, Ohio State University, November 1982.

Bishop, John H., "On the Job Training in Small Business," Washington D.C.: Small Business Administration, 1982.

Bishop, John H., "Do Employers Share the Costs and Benefits of General Training?," CAHRS Working Paper 88-8, NYSSILR, Cornell University, 8/88.

Bishop, John H. and Kang, Suk, "A Signaling/Bonding Model of Employer Finance of General Training," CAHRS, NYSSILR, Cornell University, 9/88.

Bishop, John H., Hollenbeck, Kevin, Kang, Suk, and Willke, Richard, "Training and Human Capital Formation," National Center for Research in Vocational Education, Ohio State University, July 1985.

Bruno, A. Lee and Dickerson, Jack, "Training for New Technologies: A Model for Public-Private Partnerships," CSR Incorporated, June 1982.

Bureau of Census, "School Enrollment-Social and Economic Characteristics of Students: October 1986", Washington, D.C.: U.S. Government Printing Office, August 1988.

Bureau of National Affairs, "Training and Development Programs," Personnel Policies Forum Report No. 140, September 1985.

Burke, Michael J. and Day, Russell R., "A Cumulative Study of the Effectiveness of Managerial Training," Journal of Applied Psychology, Volume 71, Number 2, 1986.

BusinessWeek, "Needed: Human Capital," Special Report, September 19, 1988.

Carey, Max, "How Workers Get Their Training," U.S. Department of Labor, Bureau of Labor Statistics, Bulletin 2226, February 1985.

Carnevale, Anthony P., "The Learning Enterprise," Training and Development Journal, Volume 40, January 1986.

Carnevale, Anthony P., Gainer, Leila J., and Meltzer, Ann S., "Workplace Basics: The Skills Employers Want," American Society for Training and Development, 1989.

Carnevale, Anthony P. and Gainer, Leila J., "The Learning Enterprise," American Society for Training and Development and The U.S. Department of Labor, draft manuscript, October 1988.

Carnevale, Anthony P. and Goldstein, Harold S., Employee Training: Its Changing Role and An Analysis of New Data, ASTD Press, 1985.

Casner-Lotto, Jill and Associates, Successful Training Strategies, San Francisco, Jossey-Bass, 1988.

Chisman, Forrest P., "JumpStart: The Federal Role in Adult Literacy, The Project on Adult Literacy", Southport Institute for Policy Analysis, January 1989.

Committee for Economic Development, Children in Need, Washington, D.C., 1987.

Cross, Patricia, Adults as Learners, San Francisco, Jossey-Bass, 1981.

Delaney, John Thomas, Lewin, David, and Ichiowski, Casey, "Human Resource Management Policies and Practices in American Firms," Graduate School of Business, Columbia University, September 1988.

Denison, Edward F., Accounting for United States Economic Growth, 1929-1969, Washington D.C.: Brookings Institution, 1974.

Denison, Edward F., Accounting for Slower Economic Growth: The United States in the 1970s, Washington D.C.: Brookings Institution, 1979.

Department of Defense, Military Manpower Training Report FY 1989, Washington, D.C.,

Flanagan, Robert J., "Labor Force Experience, Job Turnover, and Racial Wage Differentials," Review of Economics and Statistics, 56, November 1974, 521-529.

Fraser, Bryan S., "The Structure of Adult Learning, Education, and Training Opportunity in the United States," Washington, D.C.: National Institute for Work and Learning, 1980.

Freeman, Richard B., "Occupational Training in Proprietary Schools and Technical Institutes," Review of Economics and Statistics, Volume 56, August 1974.

Glover, Robert W., "Apprenticeship in the United States: Implications for Vocational Education Research and Development," National Center for Research in Vocational Education, Ohio State University, Occasional Paper 66, June 1980.

Haber, Sheldon, "Participation in Industrial Training Programs," SIPP Working Papers No. 8813, Bureau of Census, 1988.

Haber, Sheldon and Lamas, Enrique, "Training, Wage Growth, Firm Size," unpublished manuscript, George Washington University, June 1988.

Hanushek, Eric A., "Regional Differences in the Structure of Earnings," Office of Economic Research, Economic Development Administration, Department of Commerce, Washington D.C., 1972.

Hashimoto, Masanori, "Minimum Wage Effects on Training on the Job," American Economic Review, Volume 72, December 1982.

Hollenbeck, Kevin and Willke, Richard, "The Nature and Impact of Training: Evidence from the Current Population Survey," in John H. Bishop et al., Training and Human Capital Formation, Columbus: National Center for Research in Vocational Education, 1985.

Keeley, Michael, "The Economics of Firm Size: Implications from Labor Market Studies," Economic Review, Federal Reserve Bank of San Francisco, Winter 1984.

Lee, C., "Where the Training Dollars Go," Training, Volume 24, October 1987.

Levitan, Sar A., Carlson, Peter A., and Shapiro, Isaac, Protecting American Workers, Washington, D.C.: Bureau of National Affairs, 1986.

Levitan, Sar A. and Gallo, Frank, A Second Chance: Training for Jobs, Upjohn Institute for Employment Research, 1988.

Levitan, Sar A. and Mangum, Garth L., The T in CETA: Local and National Perspectives, Kalamazoo: W.E. Upjohn Institute, 1981.

Lilliard, Lee A. and Tan, Hong W., "Private Sector Training: Who Gets It and What Are Its Effects?," Santa Monica, CA: Rand Corporation, 1986.

Lusterman, Seymour, Trends in Corporate Education and Training, New York: The Conference Board, 1985.

Lynch, Lisa M., "Private Sector Training and Its Impact on the Earnings of Young Workers," Sloan Working Paper Series, November 1988.

Lynch, Lisa M., "Race and Gender Differences in Private Sector Training for Young Workers, " Sloan Working Paper Series, January 1989.

Mangum, Garth L., The Emergence of Manpower Policy, New York: Holt, Rinehart and Winston, 1969.

Mangum, Garth L., Mangum, Stephen L., and Kim, Sae Young, "Steel on the Industrial Staircase: A Conceptual Model for Early Warning to Other Industries and Nations," Economic Development Quarterly, Volume 2, 1988.

Mangum, Garth L. and Mangum, Stephen L., On the Job Training in Small Business: The State of the Art, University of Utah, Human Resource Institute, 1985.

Mangum, Garth L. and Walsh, John, A Decade of Manpower Development and Training, Salt Lake City: Olympus Publishing, 1973.

Mangum, Stephen L., "Some Evidence on Criteria for Choosing Among Alternative Training Techniques," Journal of Vocational Education Research, Volume 9, Number 2, Spring 1984.

Mangum, Stephen L. and Adams, Arvil V., "The Labor Market Impacts of Post-school Occupational Training for Young Men," Growth and Change, Volume 18, Number 4, Fall 1987.

Marshall, Ray, Remarks made at the Conference on Labor and Economic Development, China Productivity Center, Taipei Taiwan, December 21-23, 1988.

Medoff, James and Abraham, Katherine, "Are Those Paid More Really More Productive?: The Case of Experience," Journal of Human Resources, Summer 1981.

Miller, W., "Employers Wrestle with Dumb Kids," Industry Week, July 4, 1988.

National Center for Education Statistics, Digest of Education Statistics 1988, U.S. Department of Education, September 1988.

Oechslin, J. J., "Training and the Business World: The French Experience," International Labour Review, Volume 126, November-December 1987.

Parsons, Donald O., "Wage Determination in the Post-Schooling Period: The Market for On the Job Training," Center for Human Resource Research, Ohio State University, 1985.

Rosow, Jerome and Zager, R., Training: The Competitive Edge, San Francisco: Jossey Bass, 1988.

Rumsberger, R. W., "The Incidence and Wage Effects of Occupational Training Among Young Men," Social Science Quarterly, September 1984.

Schwaller, A. E., "The Need for Education/Training Programs in Industry," Phi Delta Kappan, Volume 61, January 1980.

Seeborg, I. S., Seeborg, M., and Zegeye, A., "Training and Labor Market Outcomes of Disadvantaged Blacks," Industrial Relations, Volume 25, Number 1, Winter 1986.

Seninger, Stephen, "Employment and Training Policies for Regional Growth and Economic Development," Bradley Center for Employment and Training Education and Research, University of Maryland Baltimore County, unpublished manuscript, 1988.

Simpson, Wayne, "An Econometric Analysis of Industrial Training in Canada," Journal of Human Resources, Fall 1984.

Stephan, E., Mills, G. E., Paw, R. W., and Ralphs, L., "HRD in the Fortune 500," Training and Development Journal, Volume 42, January 1988.

United States Census Bureau, Survey of Participation in Adult Education, Washington, D.C., U.S. Government Printing Office, 1987

United States Small Business Administration, "Job Training in Small and Large Firms," Washington, D.C.: U.S. Government Printing Office, 1988.

Waldman, Michael, "Interpreting Evidence on Returns to Tenure: The Significance of Quasi-Specific Human Capital," Department of Economics, UCLA, 1988.

Wenig, Robert E. and Wolansky, William D., Employer Sponsored Skill Training," National Center for Research in Vocational Education, Ohio State University, January 1983.

William T. Grant Foundation, The Forgotten Half: Pathways to Success for America's Youth and Young Families, Washington, D.C., November 1988

7c. EVIDENCE ON PRIVATE SECTOR TRAINING

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7c. EVIDENCE ON PRIVATE SECTOR TRAINING

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INTRODUCTION

Training provided by the private sector is a major force in the economy. However, its importance is appreciated and understood by few. The knowledge that exists consists largely of measures of volume -- numbers of participants and cost data in a variety of categories. While useful, these measures provide an incomplete picture that does not allow a full understanding of what organizations do to train their employees.

A complete picture of the training that employees receive should include the process of education and the content as well as the audiences and costs involved. The availability of this information will provide understanding of the quality of training as well as the quantity. This will serve to raise the overall level of training by focusing attention on how it should be planned and delivered.

WHY UNDERSTAND PRIVATE SECTOR TRAINING?

Employers represent a major source of the training provided in the United States. Annually more people are enrolled in training provided by employers than are enrolled in institutions of higher education. These represent more than 18 percent of enrollments and almost 10 percent of educational expenditures in the United States (American Society for Training and Development, 1989).

The impact of this training on productivity is even more impressive than its volume and cost. Carnevale indicates that during the period 1929-1982, learning on the job contributed about 55 percent of all improvements in the nation's productive capacity (Carnevale, 1989). In contrast, education prior to work was responsible for 26 percent and machine capital contributed to 20 percent of the improvements.

Innovation and change in facilitating learning have been major contributions of employer-delivered training. New ways to raise quality and reduce the delivered cost of education have originated in the private sector. New uses of technology to improve education and training are to be seen in the classrooms and learning centers of corporate America.

The bulk of employer-delivered training is directly job-related. Its objective is to develop the skills needed to perform specific job tasks. The content of training and the trends in content change provide important insights into the current and future performance needs of the workforce.

Examination of the content of job-based learning can provide insights into the relevance of traditional education. The inclusion of remedial training in corporate training programs indicates possible failures of the educational system to provide needed basic education. Such examination can also serve to identify topics to be considered by school systems and by higher education for inclusion in curriculum content in the future.

Any one of these considerations alone would provide sufficient reason for government, industry, and education to better understand private sector training. In combination, they represent a compelling reason for developing a complete picture of the training provided by employers. Their importance in assuring that the country has and keeps a competitive workforce demands that means be found to represent comprehensively but simply what is being done and how well it is being accomplished.

A CONCEPTUAL MODEL OF TRAINING

OVERVIEW

A wide range of variables is used to describe the training that takes place in the private sector. These include descriptions of those who receive the training, what is taught, and what it costs. Usually these measures are considered in isolation, providing an understanding of some aspects of training without affording a view of the total picture.

What is needed is a means of capturing the principal elements of training in a way that identifies individual variables while demonstrating the key relationships between them. This can be accomplished with a multi-dimensional model that considers the key elements in conjunction with one another. The elements to be considered here are the **audience**, the **content**, the **process** of training, and the **cost**. These will first be described individually and then integrated into a data-based, multi-variable model.

The variables considered here represent a core that effectively describes training provided by organizations. However, they do not represent an exclusive set. There are many more factors that can be considered. The intent is to demonstrate a workable approach -- a methodology that can be followed in a number of settings. The use of such a methodology would allow direct comparison of data from different sources. Use of a consistent approach would increase the value of studies that typically can only be compared anecdotally.

THE AUDIENCE DIMENSION

Audience describes the people receiving the training. In a business, this can be based upon the functional areas in which the employees work. The approach followed here fits most manufacturing organizations. Audience can be broken into the following functional categories:

Marketing
Service
Manufacturing and Development
Internal and Office Systems
Finance and Planning

In turn, each job within the enterprise is typically assigned to one of these functional areas. The classification of jobs needs to be done at a level of detail that results in a manageable number of jobs. In most organizations, there are 80 to 100 fundamental jobs. An overly detailed approach will result in an unwieldy number of jobs. A too general classification will result in too few jobs to give any real meaning to the data.

Other possible classifications include industry, occupation, geographic location, income, and education. The approach to be followed will depend upon the setting and the objectives of the analysis.

THE CONTENT DIMENSION

Content refers to the nature of the training offered. As with audience, there is a number of possible categories. The approach used here considers the purpose of the training. The categories are:

- Employee Development
- Job Training and Development
    - Entry
    - Experienced
    - Expert
- Management Development
    - First Line
    - Middle
    - Executive

Employee Development is training that is not related to a specific job. It may be used by employees in any functional area. Examples might include computer literacy, computer applications such as data base management, effective communications, and writing skills.

Job training and development is specific to a given job. It is broken into three levels.

> Entry training brings those entering a job to a minimum acceptable level of effectiveness.
>
> Experienced training enhances the skills of the people already functioning at a basic level. It allows them to increase their effectiveness and impact upon the organization.
>
> Expert training allows the experienced employee to assume broader responsibilities and prepares him or her for promotion to higher level jobs.

Management development addresses the managerial training needs of the newly-appointed first line manager or supervisor, the middle manager who manages managers, and the executives of the organization.

THE PROCESS DIMENSION

Process considers the way in which training is developed and delivered.

Traditionally, training has been described using measures of flow and cost. The indicators of flow include enrollments, completions, and student days. A student day represents one student in a structured learning experience for one day. This could be in a class or in formal self-study. While useful and important for quantifying the volume of training, these measures give no sense of quality. Acceptable quality is often assumed, but there are ways in which quality of training, like volume, can be assessed with some precision. The quality of training is dependent on the quality of the development and delivery of the learning experience.

An idealized view of how the training process should function is badly needed. Actual training practices can then be compared to the ideal. The degree to which they correspond can be evaluated and rated to give an assessment of quality.

The Systems Approach to Education (See Figure 1) used by the IBM Corporation is a useful and generally accepted model of the training process.

The training process begins with Business Requirements. These are actions that the organization has decided to take that represent change. New products, reorganization, entry into new endeavors, expansion of services, etc., are actions that create Business Requirements.

Performance Requirements are the work that people will have to do as a result of the Business Requirements. They may be old behaviors, changes in ways that things are presently done, or entirely new behaviors. They represent the impact of change upon the members of the organization.

Educational Requirements are new behaviors that must be taught to employees. Not all Performance Requirements lead to Educational Requirements. Some can be performed immediately. However, some generate Educational Requirements -- things that people cannot do before being trained.

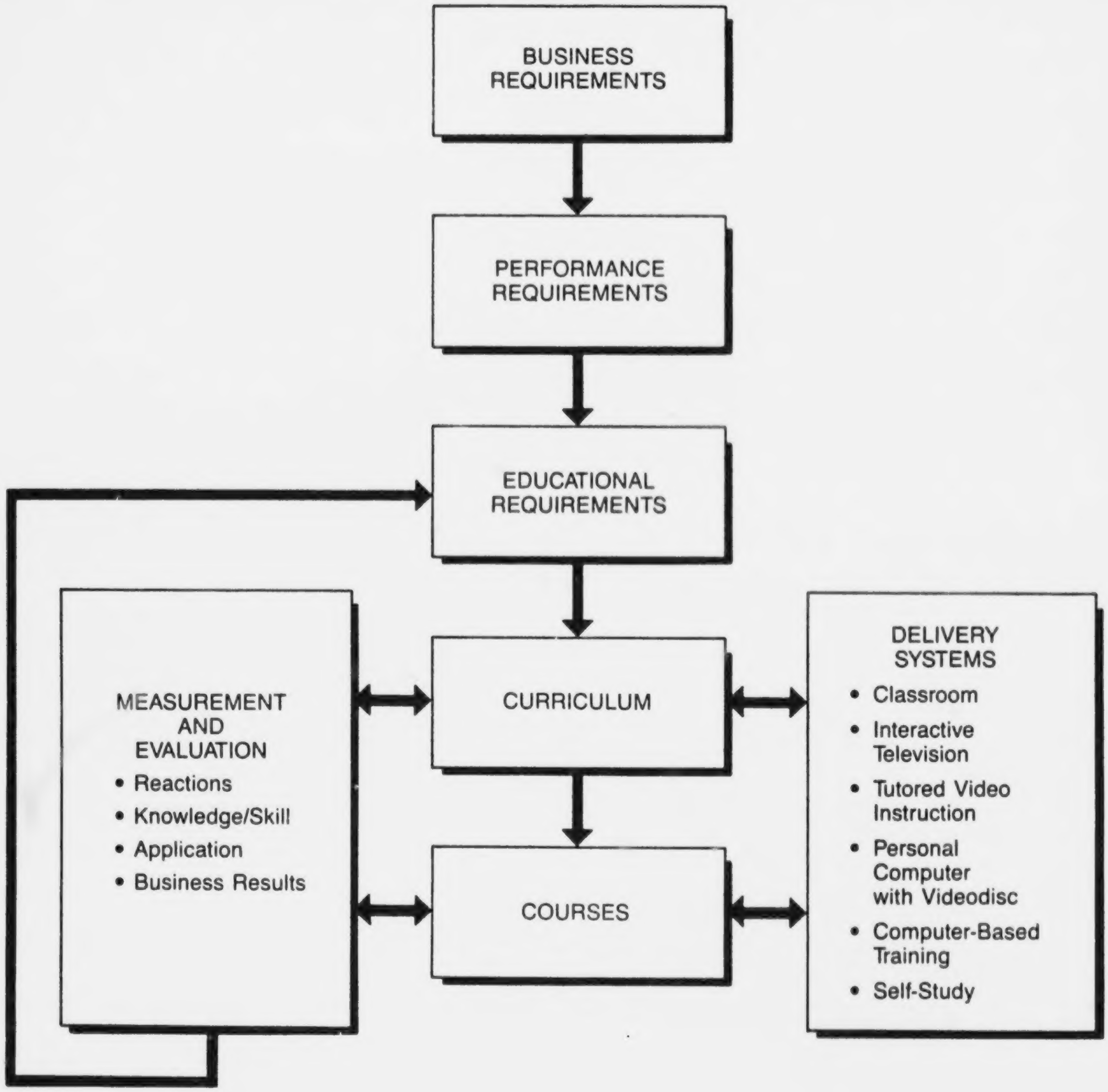
BUSINESS REQUIREMENTS
PERFORMANCE REQUIREMENTS
EDUCATIONAL REQUIREMENTS
MEASUREMENT AND EVALUATION
• Reactions
• Knowledge/Skill
• Application
• Business Results
CURRICULUM
COURSES
DELIVERY SYSTEMS
• Classroom
• Interactive Television
• Tutored Video Instruction
• Personal Computer with Videodisc
• Computer-Based Training
• Self-Study

Figure 1 -- Systems Approach to Education

Curriculums are changed by Educational Requirements. Additions, modifications, and deletions are made to them to incorporate the learning of needed new behaviors. In a complete training system, there is a curriculum for each major job. The impact of Performance Requirements that create Education Requirements for specific jobs is seen in the changes to the curriculums for those jobs.

Courses are the building blocks of curriculums. Changes to curriculums are implemented in the courses that make up the curriculum. These changes are seen in modifications to existing courses, elimination of unneeded courses, and the development and implementation of new ones.

Measurement and evaluation of results are key elements in any training system. They are necessary to assure that training works and that needed behaviors are acquired. There are four levels of measurement used in the Systems Approach to Education.

> Level one, reactions, reflects the students' responses to the training experience. Did they like the course? Did they feel it was worthwhile? What are their suggestions for changing the course?

> Level two, knowledge, is the verification that learning actually took place. It is usually measured by tests at the beginning of a course to establish entering behavior and tests at the end to demonstrate capability at the end of a course.

Level three, application, examines workplace use of the skills learned. It assesses whether behaviors on the job were actually changed and improved by training.

Observation, questionnaires, and studies determine the impact of training on work performance.

Level four, business results, focuses on how training affects business performance. It correlates business measures with training results to see how the actual operation of the enterprise has been affected.

Virtually all training is evaluated at level one, the reaction level. Knowledge measures are common in many programs but are not universal. Assessment of application of training occurs occasionally. However, correlation of business results with training performance is rare.

A complete evaluation of training requires measurement at all four levels. Otherwise, we do not know how the training system is performing and what its impact is. Evaluation of business results is difficult and not always possible. However, it should not be ignored. Meaningful attempts should be made and, when feasible, they should be incorporated into the measurement system.

Delivery Systems are the ways in which training is actually delivered to the student. Selection of the appropriate delivery system for each educational application is the key factor in maintaining quality while controlling cost. There are six principal education delivery systems.

Classroom (C/R) -- delivery by an instructor to students gathered in one location.

Interactive Television (ITV) -- course content is delivered by a live instructor in one location to students in multiple locations via television transmission.

Tutored Video Instruction (TVI) -- an instructor on videotape delivers the course. Sequence and timing are controlled by a facilitator or tutor who also answers questions and gives feedback based on student responses.

Personal Computer with Videodisc (IVD) -- course content is presented by a personal computer which also controls the presentation of sound and images from an attached videodisc player.

Computer-Based Training (CBT) -- content and exercises in a course are presented by a computer with timing controlled by the student.

Self-Study (SS) -- course content is displayed in print, as in a textbook, or by videodisc or videotape.

THE COST DIMENSION

Cost is the final dimension of training to be considered in the model. Training cost may be summarized in a number of ways. It may focus on the delivery costs involved in the actual presentation of the training. Program development costs may be accumulated for evaluation. The developmental expenses may be incorporated with delivery costs to show the total cost of education. Cost may be calculated to show expense per curriculum, per course, or per student day. The specific data used are determined by the focus of the analysis being made.

INTEGRATING THE DIMENSIONS IN A DATA-BASED MODEL

A comprehensive picture of training unfolds when the variables described above are quantified and related to each other. Relationships become apparent. Trends and directions are more visible.

A series of matrices or tables can be created. Each relates two dimensions of training to one another. Three such matrices are needed to relate the four variables in the conceptual model of training described above.

The first matrix pairs Audience and Content, the second relates Audience to Process, and the third considers Process and Content. The fourth dimension, Cost, is included as content of the matrices. While a three-dimensional matrix is conceptually possible, it is simpler and more useful at this stage to consider a series of three two-dimensional matrices.

		CONTENT			
AUDIENCE		ENTRY	EXPERIENCED	EXPERT	TOTAL
MARKETING	Participants				
	Student Days				
	Cost				
SERVICE					
MANUFACTURING & DEVELOPMENT					
INFORMATION & OFFICE SYSTEMS					
FINANCE & PLANNING					
TOTAL					

Figure 2 -- Audience and Content Matrix

The focus of these matrices can range from the micro-level to the macro-level. Data can be displayed for individual enterprises or for the entire country. Data collected from individual companies can be summarized for any level where analysis is needed or desired -- by region, by industry, by size of organization, etc.

The Audience and Content Matrix (See Figure 2) provides a useful format for summarizing the cost and volume measures of training. Possible entries include student days, student days per participant, overall cost, cost per student day, etc. These can be broken out by content level within major audiences.

The Audience and Process Matrix (See Figure 3) provides useful insights into important aspects of the quality of training. The organization of the matrix compares key elements in the development process by functional audience and in total. Examination of the data helps gauge progress in implementing a Systems Approach to Education.

> Comparison of the number of major jobs with the number of curriculums developed for a functional area shows how far training systematization has proceeded.
>
> The count of courses by evaluation level shows how far effective evaluation techniques have been implemented.
>
> A sense of the degree of implementation of cost effective delivery systems is seen in the tallies of courses by delivery system.

	AUDIENCE					
PROCESS	MARKETING	SERVICE	MFG/DEV	INFO/OFC SYSTEMS	FIN/PLN	TOTAL
JOBS IDENTIFIED	Number of Jobs					
CURRICULA	Number of Curricula					
COURSES	Number of Courses Student Days					
COURSES EVALUATED						
LEVEL 1						
	Number of Courses					
LEVEL 2						
	Student Days					
LEVEL 3						
LEVEL 4						
COURSES DELIVERED BY						
C/R						
ITV						
TVI						
	Number of Courses					
IVD						
	Student Days					
CBT						
SS						

Figure 3 -- Audience and Process Matrix

The Process and Content Matrix (See Figure 4) affords a different perspective on specific education processes by examining the process variables within level of content. Comparisons can be made that are similar to the ones described above for the Audience and Process Matrix.

SOURCES OF INFORMATION AND DATA

NEEDED SOURCES

A generally accepted vocabulary is needed to facilitate understanding of any complex activity. This is true of private sector training. Terminology used must have common meaning to all involved. Thus, consistent communication can be assured among the diverse parties involved.

A structure is required that is simple enough to facilitate general understanding without imposing unnecessary rigidity. It must be sufficiently flexible to describe actual occurrences while maintaining an organized perspective and focus.

This vocabulary and structure must include data elements as well as words and terms. Consistency in data content and the terms used to describe them is essential if studies are to be made over time to describe and analyze training.

The use of a generally-accepted model will provide a framework for describing the process and results of training. It also will contribute to improving training. Organizations will focus on the process as well as the results.

CONTENT

PROCESS		ENTRY	EXPERIENCED	EXPERT	TOTAL
JOBS IDENTIFIED	Not Applicable				
CURRICULA	Not Applicable				
COURSES	Number of Courses Student Days				
COURSES EVALUATED					
LEVEL 1	Number of Courses Student Days				
LEVEL 2					
LEVEL 3					
LEVEL 4					
COURSES DELIVERED BY					
CLASSROOM	Number of Courses Student Days				
INTERACTIVE TV					
TUTORED VIDEO					
IVD					
CBT					
SELF STUDY					

Figure 4 -- Process and Content Matrix

The models of training described above reflect these requirements. General use of such models in summarizing the results of training would allow comparison of multiple studies and reports. It would create a common frame of reference that would improve communications and improve understanding. It would assure a compatibility of data otherwise impossible without consistent terminology.

EXISTING SOURCES

Existing information about private sector training focuses on volume and demographics. There is no consistent pattern to the kind of data collected. No attempt is made to assess the quality of the training process.

BRIDGING THE DIFFERENCE

It is possible to move from the present state in which the kind of data available about private sector training is varied and dissimilar. The availability of consistent and comparable data for meaningful study is very feasible. The following section describes a process that can lead to that capability.

USING THE MODELS TO UNDERSTAND PRIVATE SECTOR TRAINING

IMPLEMENTATION

The use of models such as those suggested here represents an opportunity to achieve a full understanding of private sector training. It is a practical approach that can be put into place easily. The process consists of three stages -- **consensus** on content, **commitment** to use, and **continuing application**.

Consensus on the structure and content of the models must be achieved. This involves participation of representatives of the principal parties involved -- government, the private sector, and academic institutions.

A study group or task force can be convened and charged with the responsibility to formulate and eventually finalize the training models. The group would be led by the Department of Labor which would have as its partners the two major professional training organizations in the United States, the American Society for Training & Development (ASTD) and the National Society for Performance & Instruction (NSPI).

ASTD and NSPI would select representatives of business, industry, and education as their participants in the process. The involvement of the two professional organizations will insure a balanced perspective. Broad representation of the entire community of training developers and users will occur easily and naturally. The involvement of the Department of Labor in leading the effort assures that government perspectives and needs will be incorporated in the final work product.

Commitment to the use of the models will be needed if the benefits of their use are to be realized. This means that parties to training will agree to follow the formats established in their internal reports. Studies commissioned by government and by associations should require the employment of the models. The consensus established will have to be maintained through voluntary discipline and involuntary requirements.

Continuing application will then follow and the models will be established as de facto or actual standards. Over time their structure and details will evolve through use and can be modified periodically as needed.

BENEFITS, CHALLENGES, AND OPPORTUNITIES

Private sector training is a primary force in education in the United States. This is true for a number of reasons. The sheer amount of such training makes it a major factor. This training has a significant impact on the nation's productivity and competitiveness. It plays a major role in creating innovative and cost effective solutions to training problems. The private sector leads the nation in the use of technology in education.

Innovations in training in the corporate world can be transferred to the schools. More formal arrangements and partnerships can be established between businesses and public education to provide new solutions to the education challenges the nation faces.

The role that the private sector plays in education is not widely known. Its innovative contributions to educational problem-solving remain largely undiscovered. The application of its solutions to broader education problems fails to occur because of lack of awareness. It can play a major role in improving the quality of education in all of its forms if it is better known and understood. The approach described here can begin that process.

REFERENCES

American Society for Training and Development. *Training America - Learning to Work for the 21st Century*. Alexandria, VA, 1989.

Carnevale, Anthony P. "The Learning Enterprise." *Training & Development Journal* 43 (February 1989): 27.

8a. INTRODUCING NEW TECHNOLOGY INTO THE WORKPLACE: THE DYNAMICS OF TECHNOLOGICAL AND ORGANIZATIONAL CHANGE

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8a. INTRODUCING NEW TECHNOLOGY INTO THE WORKPLACE: THE DYNAMICS OF TECHNOLOGICAL AND ORGANIZATIONAL CHANGE

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INTRODUCTION

There is growing evidence that the United States is losing ground in terms of technological competitiveness relative to several other industrialized nations (Cyert and Mowery, 1987; Mowery, 1988; Dertouzos, Lester and Solow, 1989). This result is attributed at least in part to the failure of U.S. firms to effectively integrate new technologies at the workplace.

A vast literature exists on the impacts of technological change on employment, skill requirements, jobs and workers. In addition, technological change has long been known to be a source of both positive and negative disruption in the labor market. Yet, for a variety of reasons, including inaccurate forecasts and a myriad of ambiguous and contradictory research findings, decision makers have not been given much guidance in anticipating and planning for the adoption of new technologies.

This paper summarizes the research evidence, from aggregate and micro-level studies, on the impacts of technological change on employment, skill requirements, jobs and workers. In addition to macroeconomic conditions, it identifies and discusses a variety of technical and organizational factors that influence the outcomes of technological change. The paper highlights common patterns in skill and training requirements, the mix of institutional providers or job-related skills, and in labor markets as technologies mature. It also discusses a range of organizational factors found to affect the ways in which tasks are allocated and distributed among workers. These data suggest that the impacts of technological changes are not random and that actions can be taken to facilitate the adoption of new technologies at the workplace. The paper concludes with implications for public sector policies in the areas of human resource development to promote the beneficial outcomes of technological change, and to mitigate its negative impacts.

TECHNOLOGICAL CHANGE AND EMPLOYMENT

Macro-level studies indicate that technological change in the United States has traditionally been associated with employment growth (National Commission on Technology, Automation and Economic Progress, 1966; Office of Technology Assessment [OTA], 1985; Cyert and Mowery, 1987; OTA, 1988). Analyses of aggregate data demonstrate that technological changes have not historically generated widespread unemployment, resulted in significant changes in skill requirements, nor contributed significantly to job loss. Instead, while often labor-saving in its immediate impact, technological change has generated productivity gains and indirect employment effects that in the long-run more than compensated for initial job losses.

It has long been known that a strong national economy eases the integration of technological change at the workplace. High labor demand provides alternative employment opportunities, it also fosters voluntary quits and reduces the amount of adjustment required within adopting firms. Economic growth has been credited with easing the integration of technological change during the unfounded "automation scare" of the 1950s (National Commission on Technology, Automation and Economic Progress, 1966). More recently, relatively strong growth in the non-manufacturing sectors has facilitated the integration of office automation (OTA, 1985; Hartman, Kraut, and Tilly, 1986).

With respect to skill levels, aggregate studies suggest that the effects of technological change have been largely neutral (Spenner, 1985, 1988).[1] In other words, empirical evidence supports neither claims of significant upgrading nor claims of significant downgrading in overall skill requirements as a result of technological change.

Macro-level studies also suggest that adoptions of new technologies play a relatively minor role in permanent job loss in the United States. On the contrary, there is growing evidence that the failure of U.S. firms to remain technologically competitive contributes more to worker displacement and job loss than does the adoption of new technologies (Flamm, 1988; Mowery, 1986; Cyert and Mowery, 1987). A 1986 U.S. General Accounting Office (GAO) survey of approximately 400 establishments, for example, cites the most significant cause of plant closings and mass permanent layoffs to be reduced product demand, followed by increased competition, high labor costs, and the high value of the dollar (U.S. GAO, 1986). Facility obsolescence and production automation, factors more directly associated with technological adoptions, were cited by relatively few respondents as key causes for workers being displaced from the firm.

In addition, despite anecdotal information suggesting the contrary, aggregate indicators show that, on average, the rates of technological innovation and diffusion have not risen considerably during the past two decades (Mansfield, 1968; Rosenberg, 1976; Hunt and Hunt, 1983; Cyert and Mowery, 1987). Studies on technological diffusion also indicate that the United States lags several of its international competitors in terms of rates of adoption and levels of utilization of new technologies, such as advanced machine tools and robotics (Nasbeth and Ray, 1974; Ray, 1984; Technology Management Center, 1985; Mowery, 1988).

Limitations of Aggregate Studies

While extensive in scope, aggregate-level studies provide little guidance for anticipating and planning for the adoption of new technologies. Macro-level studies have, for instance, failed in their ability to forecast the effects of technological change on employment. In addition, these studies are conducted at such high levels of aggregation that they mask the actual effects of technological changes at the workplace.

Employment Forecasts. Forecasts of the impact of new technologies on employment have traditionally been incorrect (Cyert and Mowery, 1987; OTA, 1985). The disruptive impacts of technological adoptions have been both underestimated and overestimated. It appears, however, that actual outcomes generally fall short of oft-cited dire predictions regarding technology-induced unemployment and job loss (Buchanan and Boddy, 1983; OTA, 1985; Cyert and Mowery, 1988).

The indirect and longer-term effects of technological changes on labor markets have proven difficult to model. Even input-output analyses which incorporate interactions among industries, have been shown deficient in reliably estimating how technological changes will influence employment (Leontief and Duchin, 1986; Cyert and Mowery, 1987). Among the complicating factors has been an inability to forecast rates of diffusion of particular technologies, a key variable in determining the employment impacts of such change (Mansfield, 1968; Rosenberg, 1976; OTA, 1985; Cyert and Mowery, 1987). In addition, technological innovations are difficult to accurately foresee, as are the size and nature of new markets (NSF, 1983; Rosenberg, 1982).

These restrictions have severely limited the use of employment forecasts for signalling skill and occupational needs associated with new technologies. In fact, a recent evaluation by the Office of Technology Assessment (OTA) of the reliability of macro-level forecasts for identifying future changes in employment due to technological change concludes that their chief value is to "force attention to the many complex and uncertain ties" between these variables (OTA, 1985, p. 45).

Micro-level phenomena. The problem with using industry or national data to study the impacts of technological change has two dimensions. First, the skill and job impacts of technological change are fundamentally plant-level phenomena, the scope and diversity of which are hidden in aggregate data (van Auken, 1959; Doeringer and Piore, 1985). Second, data which combine technologies and products at different stages of their development, fail to accurately portray the fundamental processes of change (Nelson and Winter, 1974; Krumme and

Hayter, 1975; Nelson and Norman, 1977; Ford and Ryan, 1981; Malecki, 1983).

The most relevant and comprehensive data on the impacts of technological change are found in detailed case studies. Enterprise-level studies indicate how and which skills, jobs and workers are affected when technologies are adopted. In addition, as the mix of employers and production activities in an area influences the extent to which technological change results in layoffs and unemployment, micro-level analyses of firms and labor markets are the key to unraveling how technological change will affect local economies (Malecki, 1986; Browne, 1983; Flynn, 1984; Rosenfeld, Malizia, and Dugan, 1988).

Case study data show considerably more volatility in employment and skill requirements due to technological change than suggested by aggregate studies. In some instances technological change has been found to increase skill requirements (Attewell and Rule, 1984; Adler, 1983; Kelley and Brooks, 1988). In contrast, technological change has been shown to simplify or eliminate the need for various skills (Bright, 1958; Braverman, 1974; Kraft, 1977; Greenbaum, 1979; Levin and Rumberger, 1983).

The average level of skill has been shown to increase after the introduction of technological change in some firms, but remains constant or decreases in others. Similarly, net employment at the firm has been shown, alternatively, to increase, decrease or remain stable after technological change.

With respect to workers, technological change has been found beneficial by generating new jobs and advancement opportunities.

However, other workers have suffered from skill obsolescence, truncated job ladders or layoffs. Technological change has resulted in significantly diverse impacts on local communities as well, resulting in new jobs and rapid economic growth in some areas, but plant closings and unemployment in others.

The conventional wisdom is to interpret this diversity as a sign that anything can and will happen -- that "uncertainty prevails" (Spenner, 1985, 1988). This view offers little hope of unraveling the complexities of technological change at the workplace, or of developing policies to minimize the negative aspects of such change.

However, while case studies are often seen as "special cases" whose findings cannot be generalized, recent work suggests that when systematically analyzed in a broader conceptual framework, case materials can lead to generalizations useful to anticipating and planning for technological change (Flynn, 1988). In addition, while the use of micro-level studies limits quantitative assessments and forecasts of the effects of technological change, such as the overall extent of upgrading, layoffs, and the like, this level of disaggregation, permits an in-depth view and understanding of the processes of technological change not otherwise possible.

Case studies confirm the importance, noted earlier, of an expanding economy in easing adjustments to technological change. They also show, however, that a booming economy does not ensure against layoffs, unemployment and the downgrading of employees when technologies are adopted. More importantly, micro-level analyses highlight a series of technical and organizational factors that play key roles in determining the impacts of technological change.

TECHNICAL CONSIDERATIONS[2]

The characteristics and complexity of a technology affect the skills required to perform various tasks. These, in turn, influence training needs, occupational labor markets, and hiring and staffing patterns of employers.

Technologies, like products and production processes, exhibit patterns of growth and development, characterized by sequential "life-cycle" phases of introduction, rapid growth, diminished growth, and stability or decline (Ford and Ryan, 1981; Foster, 1982; Shanklin and Ryans, 1984). Introduced slowly at first, technologies, such as a numerical control technology, a micro-electronics technology, or a data-processing technology, become more widely adopted as intensive R&D efforts lead to improved performance; eventually reach a peak; and are often replaced by a new, superior technology.

Technological evolution can signal impending changes in products and production processes (Abernathy and Utterback, 1978; Hayes and Wheelwright, 1979a, 1979b). As a technology matures, for instance, uncertainty about its capabilities and limitations declines, and products and processes can become more standardized. Rapid product innovation accompanies the earliest phases of a technology's development, whereas process innovation peaks later in the technology's cycle as product design stabilizes. Innovations in the later stages of development of a technology, when they occur at all, are primarily minor improvements in equipment rather than major fundamental changes in either product or production process.

Extension of the life-cycle framework to human resource issues highlights a skill-training life cycle (STLC) which identifies common patterns in skill and training requirements, in the mix of institutional providers of job-related skills, and in occupations as technologies evolve (Flynn, 1988). [See Chart 1.]

Skill and Training Requirements

Empirical evidence demonstrates that skill requirements and training needs change over the development of a technology. The early stages of a technology's development are relatively skill- and labor-intensive (Hoover, 1948; Utterback and Abernathy, 1975; Nelson and Norman, 1977; Markusen, 1984; Bartel and Lichtenberg, 1987). Engineers and scientists are needed for product development, the construction of pilot models, and the implementation of design changes. Equipment used in relatively early stages of a technology's development tends to be general-purpose in nature, requiring skilled operatives able to adjust to frequent changes and to adapt the equipment to the individual company's needs.

As technologies mature, standardization and the expanded use and complexity of equipment foster a greater division of labor and the subdivision of multifaceted tasks into more narrowly defined assignments (Bright, 1958; Enos, 1962; Utterback and Abernathy, 1975; Nelson and Phelps, 1966; Nelson and Norman, 1977). Tasks that have been simplified, i.e., "deskilled," can be performed with less skill,

Chart 1

The Skill-Training Life Cycle [STLC]

	I Introduction: New and Emerging Skills	II Growth: Increased Demand for Skills	III Maturity: Tapering off of Growth for Skills	IV Decline: Skill Obsolescence
Nature of Tasks	Complex	Increasingly routinized	Increasingly routinized	Narrowly defined
Type of Job Skills	Firm-specific	Increasingly general	General; transferable	General; transferable
Effects on Job Structure	Job enlargement; New positions created when a significant change in skill needs occurs	Emergence of new occupations	Relatively rigid job hierarchy; occupations associated with formal education and related work experience requirements	Elimination of occupations
Skill Training Provider	Employer or equipment manufacturer	Market-sensitive schools and colleges	Schools and colleges, more generally	Declining number of schools and colleges; some skills provided by employer

Adapted from: Patricia M. Flynn, Facilitating Technological Change: The Human Resource Challenge, (New York: Ballinger Publishing, 1988): 19.

experience and independent decision-making on the part of workers (Bright, 1958; Braverman, 1974; Kraft, 1977; Greenbaum, 1979). The tasks of semiskilled operatives, for example, often shift to monitoring and control of the equipment. In addition, product assembly can be done by low-skilled and unskilled workers who concentrate on a limited number of narrowly-defined tasks. Once embodied in the workforce, skills are transferred to the production equipment.

Tasks across the entire skill spectrum (e.g., professional, technical, craft, maintenance and repair, clerical, operative and laborer) have been found vulnerable to the deskilling process (Bright, 1958; Attewell and Rule, 1984; Flynn, 1988). In general, the skill level of the tasks being simplified is inversely related to the degree of standardization of the products and the production processes. When equipment is initially introduced into small-batch production, for example, high-skill handicraft work such as that of machinists and welders is simplified or eliminated. The evolution of machine languages, as well as the proliferation of software packages and user-friendly computer programs, contribute to the increasing standardization and simplification of relatively high-skill programming tasks. The automation of routinized assembly functions, in contrast, eliminates relatively unskilled tasks.

Shifting Institutional Responsibilities for Training

The nature of training needs and institutional responsibilities regarding the provision of job-related skills also change as a technology matures. When a technology newly emerges, the firm-specific nature of skills required and the lack of workers with these skills mean that employers must provide their own training or rely on the equipment manufacturer to do so.

After a technology becomes more widely adopted and equipment standardized, skills that were once "firm-specific" become "general" skills transferable among employers (Becker, 1964). As with products, increased demand and standardization of skills permit their "production" on a larger scale and at locations away from the R&D sites. Employers are less able to capture the return on investments in general, as opposed to firm-specific, skills, and generally prefer that such training be provided in the schools, where the government or individual students will pay for it. Moreover, as demand for such skills grows, it is easier to standardize the training and provide it in the schools. Together, these two forces, encourage the shift of skill development from the workplace to the formal educational system as technologies mature. Computer programming, keypunching, word processing training, and the set-up and operation of numerical control equipment are classic examples of this transfer.

There is ample evidence that the educational system responds to labor market changes as technologies evolve (Somers, 1968; Mangum, 1971; Freeman, 1971; Doeringer and Flynn, 1982; Taylor, Rosen and Pratzner, 1983; Grubb, 1984). Such responsiveness occurs, however, with various lag structures and differs significantly by occupation and by type of educational institution. As the provision of job skills shifts from the workplace to the educational system, the skills are initially offered by schools and colleges oriented toward meeting the needs of employers (Wilms, 1981; Flynn, 1981; Taylor, Rosen and Pratzner, 1983). As demands for skills mature, training becomes more widely diffused among education and training institutions.

As old technologies become obsolete, training focuses on replacement needs and on the retraining of workers for other fields. A limited market for skills and declining student enrollments result in the termination of occupational training programs in these fields. The responsibility for training to fill relatively short-term, skilled replacement needs can revert back to the firm.

Technology, Occupations and Careers

Case study evidence also reflects shifting occupational demands as skills become standardized and transferable among firms. In contrast to their early-adopting counterparts, for example, later adopters of data processing and microelectronic technologies cite demands for relatively well-defined computer-related occupations, such as computer programmers, computer technicians and systems analysts. Similarly, case studies show that with adoptions of relatively mature technologies, technicians and operatives perform maintenance and repair work, which in earlier stages of the technology's development were the responsibility of engineers.

Empirical evidence also suggests that occupational changes over the development path of a technology can trigger a growing disparity between those who lose and those who gain from technological change at the workplace. More specifically, with the adoption of newly emerging technologies, job enlargement, the relatively high degree of uncertainty, and the lack of appropriately trained workers favors selection and retraining of current employees. As technologies mature, the emergence of occupations and the growing supply of appropriately skilled workers, allows employers to fill their technology-induced needs with workers who have acquired their skills (which are now transferable) at other firms or in schools and colleges. As occupations become more clearly delineated they often become associated with particular educational credentials and previous related-work experience -- a trend that further fosters discontinuous job ladders and barriers to advancement within firms as technologies mature (Collins, 1979; Menzies, 1981).

ORGANIZATIONAL FACTORS

While trends in skill requirements, training needs and occupations as technologies develop alter the larger environment in which firms operate, organizational factors, such as management practices and labor-management agreements, determine how and when technologies are used (Child, 1972, 1984; Wilkinson, 1983; Buchanan and Boddy, 1983; Clark _et al_., 1988). Recent studies confirm that similar technologies adopted by firms at the same point in time can generate dissimilar impacts on jobs and workers (Kelley, 1986; Jaikumar, 1986; Spenner, 1988; Kelley and Brooks, 1988).

A variety of mechanisms, including retraining, the recruitment of new workers, transfers, liberalized retirement plans, hiring freezes, the use of temporary workers, and layoffs, have been used by employers to integrate technological change at the workplace (van Auken, 1959; Doeringer and Piore, 1985). To date, no unifying model or approach has been devised to systematically assess how conditions within the firm influence the impact of technological changes on jobs and workers. The development of such a model is beyond the scope of this paper. Instead, the sections that follow identify and briefly discuss several organizational factors found in micro-level studies to be instrumental in shaping the outcomes of technological change.

Management Practices and Business Decision Making

Management is usually responsible for the timing and selection of technologies to be incorporated at the workplace (Bright, 1958; Roberts, 1984; Katz, 1985). Case studies suggest that employers often plan technological changes to coincide with business expansions, when greater opportunities for internal promotions and transfers exist. Hiring freezes and the use of temporary workers in the period prior to the adoption have also been used to minimize the amount of disruption among regular employees. In addition, attractive voluntary retirement and severance pay packages have been used to reduce the pool of workers seeking reemployment. As a result of these and other internal adjustment measures, case study evidence suggests that most workers whose jobs have been eliminated by technological have been reassigned within the firm (Flynn, 1988).

Cases proving the exception to this conclusion -- that were characterized by massive layoffs and unemployment -- were those involving technological changes either (1) in firms in "declining industries," or (2) accompanied by a geographical relocation of production. In cases of firms in industries experiencing a long-term decline in output, such as in textiles, apparel and coal mining, transfer opportunities were few, if any. Thus, many of the workers whose jobs were eliminated by technological changes were often laid off. The second source of considerable layoffs involved intra-firm plant consolidations or the relocation of a plant geographically far from the initial work site. In these instances, lesser efficient plants were usually closed, in favor of technologically more sophisticated work sites. Workers displaced in the latter plant closings were generally offered jobs at the new work site, however, they often refused to accept a long commute or a residential move.

The timing of the adoption relative to the "age" of the technology also affects the nature of the adjustment at the workplace. As indicated above, the stage of development of the technology influences not only the nature of new skill needs but also the availability of appropriately trained workers. There are, however, a range of options available to managers in terms of ways in which new tasks can be integrated into the job structure. The deskilling of tasks need not result in deskilled jobs or downgraded workers. Tasks that have been simplified, or deskilled, can often be regrouped to generate jobs requiring similar or more advanced skills than prior to the change, rather than allowing jobs to become more narrow, easier and less satisfying. The use of job rotation and work teams, for instance, results in different skill needs of workers than does the decision to assign a smaller set of specific tasks to individual workers (Hirschhorn, 1984; Barley, 1986; Kelley, 1986; Jaikumar, 1986).

Organizational and managerial changes are often deemed necessary to fully exploit the potential productivity gains of new technologies (National Research Council (NRC), 1986; Cyert and Mowery, 1986). Managers have been criticized, however, for failure to: (1) effectively evaluate both the short-term and long-term costs and benefits of technological adoptions, (2) develop organizational structures that can fully exploit the productivity gains associated with new technologies, and (3) establish fruitful, cooperative relationships with workers (Cyert and Mowery, 1987). A variety of factors contribute to these results, including outdated cost accounting practices, antiquated organizational structures, and adversarial labor-management relationships (Hayes and Abernathy, 1980; Starr and Biloski, 1985; Brimson, 1986; Johnson and Kaplan, 1987; Drucker, 1988; Hayes and Jaikumar, 1988).

Labor Management Relations

Labor-management relations can significantly influence an organization's ability to adjust to technological changes. Changes in traditional job classifications and pay structures, for instance, often accompany the adoption of new technologies (NRC, 1986; OTA, 1985, 1988; Osterman, 1988). While collective bargaining agreements often do not indicate specifically how new technologies are to be introduced at the workplace, various clauses do address the staffing of new positions, the restructuring of jobs, criteria for workers selected for layoffs, changes in compensation systems, and so forth.

Case study evidence shows, for example, that in both offices and factories, current employees were usually retrained and assigned to the highly-skilled jobs created with the adoption of newly emerging technologies. The pool from which these workers were drawn, however, often differed. In factories, negotiated contract clauses on job security and seniority tended to weight the selection decision in favor of those workers who had been displaced by the technology. In contrast, when relatively high-skill positions were created by office automation, the clerical workers most directly affected by the changes tended to be laterally transferred rather than assigned to the new jobs. Instead, usually based on aptitude test results or management interviews and references, workers from other departments in the firm were generally transferred into the better positions. These workers were subsequently provided the required skills in company-sponsored training programs.

Facing growing displacement of their workers in recent years due to plant closings and various technological changes, several unions have accepted concessions in work rules and more flexible job assignments and work procedures, in exchange for a greater commitment on the part of employers to support employment security measures (Cappelli, 1983; Katz, 1985; Kassalow, 1987; Casner-Lotto, 1989). The UAW-GM contract, for example, provides the union advance notice of the adoption of new technologies and the creation of a joint union-management committee to handle layoffs related to technological change. Workers whose jobs are eliminated by technological change are guaranteed employment at full pay and fringe benefits for as long as they are willing to retrain.

Unions have also begun to negotiate educational and retraining services for displaced, as well as active, workers (Kassalow, 1987; Casner-Lotto, 1989). The Ford and General Motors contracts with the United Automobile Workers (UAW), and the AT&T agreement with the Communications Workers of America (CWA) provide for training, counseling and relocation services to workers displaced from the firm. In addition, union-management agreements have resulted in a broadening of the scope of courses eligible under tuition remission programs, to include, for example, the provision of job-related skills useful for employment outside the firm, and of more general personal development courses such as those in computer literacy, written and oral communication techniques, and goal setting and motivation.

While still relatively few in number and too new to evaluate, these innovative agreements demonstrate the potential for union-management cooperation to promote technological change at the workplace through measures designed to enhance flexibility and employment security.

Firm Size

Case studies on technological change generally pertain to relatively large firms. Empirical evidence is scant on how jobs and workers across firm sizes fare when technological adoptions occur. More generally, limited training budgets and relatively small demands for particular skills, make small and medium-sized firms more dependent on external sources -- such as schools and colleges, government training programs and other firms -- to meet their skill requirements. Compared to larger firms that are often able both to develop formal training programs and to offer higher wages and greater promotion opportunities, it would appear that smaller firms would be at a disadvantage in training and in retaining trained workers in areas in which skills are scarce as new technologies develop.

With respect to the adoption process itself, small firms are said to be at a disadvantage due to relatively large costs (Kamian and Swartz, 1982; NSF, 1983). In addition, the batch size of relatively small employers is often too small to effectively exploit the benefits of new technologies (Rees, Briggs and Hicks, 1983; Kelley and Brooks, 1988). Recent reports on flexible manufacturing systems (FMS) suggest that small firms may be at less of a disadvantage with these programmable technologies than with earlier technologies that primarily benefitted the large volume, mass producer (Piore and Sabel, 1984; Nemeta and Fry, 1988). There is little empirical evidence to confirm or refute this hypothesis. At least one study, however, suggests that large, diversified firms, are the greatest beneficiaries of these new technologies, not small employers (Kelley and Brooks, 1988).

Worker and Manager Support

While case studies highlight a variety of conditions (e.g., job security, good communication of expected outcomes, extensive planning, a sufficiently long period between the decision and the installation of the technology, and an adequate retraining program) that facilitate the adoption of new technologies, one characteristic stands out as vital to the successful adoptions: the support of workers and managers for the change. Workers and supervisors supportive of a new technology, for instance, are found to excuse or overlook potentially damaging problems related to the change, such as the failure of management to adequately plan, communicate or retrain workers. In contrast, empirical evidence shows that when workers or supervisors are resistant to the technological change, even relatively minor modifications in skill requirements, job content, or training, become major stumbling blocks. The failure to garner worker or managerial support thwarts technological change even in case studies characterized by extensive planning, workers sympathetic to the reasons for change, and on-going communication among supervisors and other employees.

Consistent with the management and organizational behavior literature more generally, case studies on technological change suggest

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that perceived changes in job security or career advancement opportunities generate more worker resistance than does the technology itself (Lawrence, 1969; Buchanan and Boddy, 1983). More specifically, firms with stated policies of employment security or 'no layoffs or downgrading due to technological change' rarely encountered significant resistance to adoptions of new technologies.

CONCLUSION

This review of the literature demonstrates that a human resource strategy to facilitate the effective integration of new technologies at the workplace must be comprehensive yet flexible, and be sensitive to the dynamics of technological and organizational change.

A Comprehensive Strategy

The effects of technological change are pervasive: they influence local as well as international markets; high-technology as well as mature industrial sectors; economically depressed as well as 'boomtown' economies; and highly-skilled as well as low-skilled and unskilled workers. Human resource strategies to promote technological competitiveness require a comprehensive approach, rather than one targeted to a particular set of skills, workers or industries.

The life cycle framework highlights the need for policies for both the "upside" and "downside" of technological change. The failure to meet the demands for new, highly skilled labor created by the adoption of new technologies, can hamper the diffusion of new technologies, restrict the productivity of workers and of firms, and undermine industrial competitiveness and economic growth. Failure to minimize the negative impacts of technological change, as jobs are simplified or eliminated can further constrain technological progress.

The nature and extent of human resource adjustments generated by technological changes will vary over the business cycle, as will the extent to which adjustments spill beyond firms into the labor market more generally. Even in prosperous times, however, technological change generates a considerable amount of structural change which disrupts jobs and workers. New training, retraining and other adjustment mechanisms are needed when the economy is strong as well as when it is weak.

The Need for Flexibility

The diversity of impacts of technological change, suggests that while comprehensive, strategies must also provide the flexibility to accommodate a wide range of needs of individual workers, firms and communities. Workers will vary in their needs for job-related skills, basic skills, relocation assistance, information on alternative jobs, income support, and so forth. The evolving nature of technological change also emphasizes the need for firms to be able to adapt to skill and occupational shifts over time. Moreover, the ways in which a community can best integrate technological change depends on its employment base, and its relative cost and resource advantages (Malecki, 1983; Browne, 1983; Flynn, 1984). The attraction of new and emerging "high technology" businesses has been shown, for instance, to be an effective development tool in economically depressed areas. (Flynn, 1984; Oakey, 1984; Malecki, 1986). However, "high technology" employment is not sufficiently large to rescue all such communities (Riche, Hecker and Burgan, 1984. The key to economic renewal for many communities lies in the integration of new technologies into more traditional industries to help them become more competitive (Browne, 1983; Sabel, et al.,)

Technical and Organizational Influences

Understanding the dynamics of technical and organizational change will ease the task of developing effective policies to promote the technological adoptions at the workplace.

When viewed in the life-cycle framework, in which technologies are seen as dynamic phenomena whose skill and training requirements change as they evolve, empirical evidence sheds new light on a variety of recurring issues associated with technological change. From this perspective, the data demonstrate that, while complex, the impacts of technological change are not random. Furthermore, the common patterns and trends that are identified help to reconcile many of the inconsistencies found in previous research.[3]

In the life cycle perspective, empirical evidence suggests that the uncertainties of adopting new technologies are preferable to the known outcomes of failing to remain technologically competitive. Adoptions of technologies while in their earlier phases of development appear to be associated primarily with the positive impacts of technological change. In contrast, the preponderance of negative impacts appear related to adoptions of relatively mature technologies or to the failure of firms to adopt at all.

The adoption of emerging new technologies, for example, offers a relatively wide range of upgrading and job enlargement possibilities at the workplace. In contrast, truncated job ladders and the diminished advancement opportunities are found primarily in cases of adoptions of relatively mature technologies. In addition, mass layoffs and widespread unemployment that accompanied technological changes tend to occur in firms with declining product demand or more generally those in declining industries that offer little opportunity for alternative employment.

The life cycle framework does not, of course, eliminate uncertainty. Consistent with life cycle models or products and technologies, a variety of skill development paths are possible, with their timing and shape a function of levels of uncertainty, standardization and demand (Dhalla and Yuspeh, 1976; Wasson, 1978).[4] Skill-training life cycle (STLC) patterns are, therefore, expected to differ depending on a series of factors including the nature of the "parent" technology, the complexity of skill needs generated, and the rate of diffusion of the technology. The life cycle framework, however, provides a tool for managers, in both the private and public sectors, for assessing how these technical patterns will affect a particular worksite or community.[5]

IMPLICATIONS FOR PUBLIC POLICY

There is a growing body of empirical evidence suggesting that U.S. firms are increasingly losing ground in terms of technological competitiveness (Mowery and Cyert, 1987, 1988; Dertouzos, Lester, and Solow, 1989). Moreover, in contrast, to the unfounded "automation scare" of the 1950s, the United States is not enjoying the economic growth that eased the integration of technological changes during that period. These trends forebode greater likelihood of the negative ramifications of technological change (e.g., mass permanent job loss and unemployment) in the United States, and a diminishing share of the positive impacts (e.g., productivity gains, employment growth, expanding advancement opportunities) associated with such change.

Human resource adjustments to particular technological changes (e.g., training for emerging new technologies, retraining and reassignment of workers whose jobs have been eliminated) occur primarily within firms. However, as highlighted by the life-cycle framework in general and the STLC in particular, there are circumstances when the preparation for, and adjustment to, technological change does not take place at the workplace. The public sector should play a leadership role in these areas, which fall into three categories: (1) skill development to prepare the workforce for technological change; (2) programs to ease the transition of technologically displaced workers caught; and (3) support of research and dissemination of findings on technological competitiveness.

Preparing the Workforce for Technological Change

The dynamic nature of production life cycles and technological change highlights the need for workers who are able to adjust to skill and job shifts over time, and who are capable of absorbing job-related skills provided at the workplace (U.S. Dept. of Labor, et al., 1988; Carnevale, 1989). The education and training system should provide labor market entrants with strong basic skills, (e.g., reading, written and oral communication skills, computational skills, and problem solving skills) and should provide access to basic skill development throughout each individual's working life.

In addition, the education and training system should also seek to prevent major skill shortages and eliminate bottlenecks that would otherwise constrain economic progress and technological advance. Quantitatively, the demands for new, highly skilled labor created by the adoption of new technologies appear small quantitatively compared to total employment needs. The failure to meet these needs, however, can hamper productivity gains and the introduction of new technologies at the workplace.

Firms provide workers with new skills as they initially arise. As skills become more generalized and transferable among employers, these skills can and should be transferred to other components of the education and training system.

Funding for small-scale, innovative, experimental programs facilitate the transfer of new and emerging skills training to the schools (Flynn, 1988). Strong program monitoring and evaluation, and extensive dissemination of the results, helps maximize the spillover benefits from the initial "venture capital". The federal government is a logical candidate to sponsor these experimental programs, in that it can coordinate them nationally, minimize duplication, and provide for widespread dissemination of the findings. In the absence of federal assistance, states should take the initiative in funding experimental programs or in developing mechanisms that encourage a flow of private sector funds for this purpose. State-wide proposal competitions, as opposed to the distribution of these monies by formula, are recommended in the allocation of these limited funds.

Public policy needs to be sensitive to differing time frames between educators and employers, and guard against being so "labor market responsive" as to undermine long-term economic growth and the ability of workers to adjust to structural changes over time. The changing role of institutional providers of skills as technologies evolve, however, highlights the need for on-going communication and cooperation among businesses and schools. For instance, employer input, via participation on advisory committees for various occupational education programs or through cooperative education programs can signal to educators trends in emerging labor market needs, the transferability of skills among workplaces, and skill obsolescence.

In recent years public policy has tried to move in directions that favor a greater understanding of how changing skill needs of workers and employers can be better integrated. For example, the Perkins Vocational Education Act and the Jobs Training Partnership Act (JTPA) have more actively promoted industry-school partnerships and public-private cooperation and coordination.

Employment and training policies in the United States have traditionally focused on schools as the primary source of job skills, while other important sources of skill development have received relatively little attention. The life-cycle framework suggests the need to more fully integrate non-school providers of job-related skills, such as union apprenticeship programs, the military, government training programs, and firms into employment and training programs.

Easing the Adjustment of Workers in Transition

Skill obsolescence, plant closings and worker displacement are seen, in the life-cycle framework, as "natural" consequences of technological progress. Rather than trying to prevent these events, public policies should be geared toward integrating change and facilitating the readjustment of workers caught in the transition.

The bulk of the retraining that occurs in response to deskilling and skill obsolescence as technologies mature, takes place at the workplace. Mass permanent layoffs, plant closings, and plant relocations, however, impede the process whereby most workers acquire skills for alternative employment.

Policies for displaced workers in the past, such as Title III of JTPA, have emphasized rapid redeployment of workers in new jobs. Such policies have failed to provide much opportunity for workers to acquire or strengthen their basic skills (OTA, 1986; Cyert and Mowery, 1987). In addition, while existing unemployment compensation policies provide income support for workers temporarily laid off, they do not deal effectively with the problems of long-term displacement. In many states workers undertaking retraining are ineligible for unemployment compensation.

Experience suggests that the importance of employment security should not be underestimated in terms of its impact on worker support for the adoption of new technologies (Roberts, 1984; Gutchess, 1985; NRC, 1986; Liker, Roitman and Roskies, 1987; Osterman, 1988). Public policy cannot insure employment security. It can, however, seek to provide a better network of support services to ease workers in transition than has been available in the past. Health insurance and pension plan packages that accompany the worker to alternative employment, for example, will indirectly facilitate technological changes at the workplace.

Experience also demonstrates the benefits to workers of advanced notice of permanent job loss, the provision of retraining and reemployment services prior to layoff, and the importance of income support during retraining (OTA, 1986; Cyert and Mowery, 1987). Public policies for displaced workers have been moving in these directions over the past year. The Worker Adjustment and Retraining Notification Act (WARN) of 1988, for example, mandating 60-day employer notice to workers prior to large-scale layoffs, will provide considerably more time than public officials have usually received to implement adjustment programs for workers displaced from their firms. Recent provisions in the Economic Dislocation and Worker Adjustment Assistance Programs (EDWAA) in the Omnibus Trade and Competitiveness Act (OTCA) of 1988 which amends Title III of JTPA provides for rapid response systems to assist workers and communities undergoing major layoffs. Amendments to the Trade Adjustment Act (TAA) also contained in OTCA expand eligibility, require participation in training and increased cooperation with other training and employment programs.

The effects of these changes need to be documented and evaluated. Funding levels raise questions about the potential quantitative impacts these changes can bring about. Moveover, implementation issues remain. For example, while stipends to workers in extended training or education programs were permitted under Title III of JTPA, they were seldom provided (OTA, 1986). Relocation assistance funds also have been found relatively underutilized in the past (OTA, 1986).

Lastly, with respect to economic development, experience confirms that "company towns" and areas in which a substantial share of employment is tied to one or two product lines or to a group of firms with products and technologies in similar phases of development are especially vulnerable to the negative impacts of technological change (Chinitz, 1960; Malecki, 1983; Flynn, 1988). Common sense suggests a policy of industrial diversity, however, market forces can generate the opposite result. The success of a booming, dominant industry, for example, can "crowd out" alternative employment and accelerate the departure of traditional manufacturing from an area.

By understanding firms and jobs that make up the local employment base, and the influence economic, technical and organizational factors have on the impacts of technological change, state and local planners can anticipate and plan for major structural changes before being faced with large-scale layoffs and plant closings.

Research and Dissemination

In spite of an extensive literature on the topic of technological change, critical gaps remain in our understanding of how to foster technological competitiveness among U.S. firms. The public sector should assume the responsibility for widely disseminating research findings and models of "what works" and "what doesn't work" in integrating technological change. The public sector should also take a leadership role in seeking to procure the necessary data, as well as its unbiased analysis, to provide substantive, analytical research in areas dominated by anecdotal evidence or untested hypotheses. For instance, while it is generally assumed that product life cycles are getting shorter -- a trend that suggests that STLCs will accelerate, hastening skill obsolescence -- there is little empirical evidence to either support or refute this premise (Rink and Swan, 1979; Davidson, 1980; Mansfield and Romeo, 1980; Qualls, Olshavsky and Michaels, 1981).

Samples of other potential research topics that emerge from this paper include:

- The feasibility and characteristics of joint ventures among small firms or partnership arrangements involving small and large firms that facilitate technological adoptions.
- Development of a model for systematically assessing the impacts of organizational factors on the impacts of technological change.
- Relationships and interaction among economic, technical and organizational factors affecting the impacts of technological change.
- The role various factors, including skill shortages and labor costs, play in the relatively slow adoption of new technologies by U.S. firms.
- The types of data that, if collected systematically, would best contribute to an understanding of the relationships among training, technological change and productivity.

NOTES

1. Spenner (1985 and 1988) provides a detailed review of aggregate studies on technological change and skill requirements.
2. This section draws heavily upon Chapters 2 and 3 of (Flynn,1988).
3. Despite wide-ranging implications of the "age" of a technology on employment and skills, the technology's stage of development is often neglected in studies on the impacts of technological change. Adding to the confusion is the variety of uses of the term "new technologies" -- the literature may refer to technologies that are new to the firm and its workers, but are relatively mature in terms of the stage of development of the technology. This distinction is vital to unraveling the complex effects of technological change on jobs and workers, and to developing effective policies and programs to implement such change.
4. While the increasing role of multinational, multiproduct firms suggests modifications to the international life-cycle model, levels of risk, standardization or product and equipment, and product demand -- the key features underlying the dynamics of the life-cycle models, continue to play critical roles in determining production and employment patterns. See, Krumme and Hayter, 1975; Vernon, 1979.
5. See Flynn, 1989, for more detail on the implications of the life-cycle perspective on technological change for employers.

REFERENCES

Abernathy, William J., and James M. Utterback. "A general model. In W.J. Abernathy, The Productivity Dilemma. Baltimore MD: The John Hopkins University Press, 1978, Chapter 4.

Adler, Paul. "Rethinking the skill requirements of new technologies," Working Paper HBS 84-27, Cambridge, MA: Graduate School of Business Administration, Harvard University, 1983.

Attewell, Paul and James Rule. "Computing and organizations: What we know and what we don't know," Communications of the ACM, 27/12., (December 1984): 1184-1192.

Barley, Stephen, R. "Technology as an occasion for structuring: Evidence from observations of CT scanners and the social order of radiology departments," Administrative Science Quarterly 31 (1986): 78-108.

Bartel, Ann P., and Frank R. Lichtenberg. "The comparative advantage of educated workers in implementing new technology." The Review of Economics and Statistics, 69/1(February 1987): 1-11.

Becker, Gary. Human Capital. New York: Columbia University Press, 1964.

Braverman, Harry. Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century New York: Monthly Review, 1974.

Bright, James, R. Automation and Management Boston: Harvard University Graduate School of Business Administration, 1958.

Brimson, James A. "How advanced manufacturing technologies are reshaping cost management," Management Accounting (March 1986): 25-29.

Browne, Lynn E. "Can high tech save the great lake states?" New England Economic Review, Federal Reserve Bank of Boston, (November/December 1983): 19-33.

Buchanan, David A., and David Boddy. Organizations in the Computer Age, London: Gower, 1983.

Cappelli, Peter. "Union gains under concession bargaining," unpublished manuscript, 1983.

Carnevale, Anthony, P. Workplace Basics: The Skills Employers Want. Washington, D.C.: American Society for Training and Development, 1989.

Casner-Lotto, Jill and Associates. Successful Training Strategies. San Francisco: Jossey-Bass Publishers, 1988.

Child, John. Organization, 2nd edition. London: Harper and Row, 1984.

Child, John. "Organization structure, environment and performance: the role of strategic choice," Sociology, 6/1(1972): 1-22.

Chinitz, Benjamin. "Contrasts in Agglomeration: New York and Pittsburgh." American Economic Association, Papers and Proceedings, 50/3(1960): 279-289.

Clark, Jon, et al., The Process of Technological Change. Cambridge: The Cambridge University Press, 1988.

Collins, Randall. The Credential Society. New York: Academic Press, 1979.

Cyert, Richard M., and David C. Mowery, (eds.) The Impact of Technological Change on Employment and Growth. New York: Ballinger Publishing Company, 1988.

Cyert, Richard M. and David C. Mowery, (eds.) Technology and Employment Washington, D.C.: National Academy Press, 1987.

Davidson, William H. Experience Effects in International Investment and Technology Transfer. Ann Arbor, MI: UMI Research Press, 1980.

Dertouzos, Michael L., Richard K. Lester, and Robert M. Solow. Made in

America. Cambridge, MA: The MIT Press, 1989.

Doeringer, Peter B., and Patricia M. Flynn. "Manpower strategies for growth and diversity in New England's high technology sector." In John C. Hoy and Melvin H. Bernstein (eds.) New England's Vital Resource: The Labor Force. Washington, D.C.: American Council on Education, 1982, pp. 11-35.

Doeringer, Peter B., and Michael J. Piore. Internal Labor Markets and Manpower Analysis. Armouk, NY: M.E. Sharpe, Inc., 1985.

Dhalla, H.K., and S. Yuspeh. "Forget the product life cycle concept." Harvard Business Review 57/2(March-April 1976): 127-136.

Drucker, Peter F. "The coming of the new organization," Harvard Business Review (January-February, 1988): 45-53.

Enos, J. "Invention and innovation in the petroleum refining industry." In The Rate and Direction of Inventive Activity. Princeton, NJ: University Press for the National Bureau of Economic Research, 1962.

Flamm, Kenneth. "The changing pattern of industrial robot use." In Richard M. Cyert and David C. Mowery (eds.) The Impact of Technological Change on Employment and Economic Growth. New York: Ballinger Publishing Company, 1988, pp. 267-328.

Flynn, Patricia M. Facilitating Technological Change: The Human Resource Challenge. New York: Ballinger Publishing Company, 1988.

Flynn, Patricia M. "Lowell: A high technology success story." New England Economic Review. Federal Reserve Bank of Boston (September/October, 1984): 39-49.

Flynn, Patricia M. "Occupational education and training: Goals and

Performance." In Bruce Vermeulen and Peter B. Doeringer (eds.) Jobs and Training: Vocational Policy and the Labor Market. Boston: Martinus Nijhoff Publishing, 1981, pp. 50-71.

Flynn, Patricia M. "Preparing Workers and Organizations for for Technological Change: The Life-Cycle Perspective." Paper prepared for the National Planning Association, Committee on New American Realities, January 1989.

Ford, David and Chris Ryan. "Taking technology to market." Harvard Business Review (April-May 1981): 117-126.

Freeman, Richard B. The Market for College-Trained Manpower. Cambridge: Harvard University Press, 1971.

Greenbaum, Joan. In the Name of Efficiency: A Study of Change in Data Processing Work. Philadelphia, PA: Temple University Press, 1979.

Grubb, W. Norton. "The bandwagon once more: Vocational preparation for high technology occupations." Harvard Education Review 54/4 (November 1984): 429-451.

Gutchess, Jocelyn F. "Employment security and productivity? It can be done" National Productivity Review, 4/3(Summer 1985): 275-286.

Harris, Candee S. "Establishing high technology enterprises in metropolitan areas." In E.M. Bergman, (ed.) Local Economies in Transition. Durham, NC: Duke University Press, 1986.

Hartmann, Heidi I., Robert E. Kraut, and Louise A. Tilly, (eds.) Computer Chips and Paper Clips. National Research Council (NRC). Washington, D.C.: National Academy Press, 1986.

Hayes, Robert H. and William J. Abernathy. "Managing our way to decline." Harvard Business Review (July-August 1980): 67-77.

Hayes, Robert H. and Ramchandran Jaikumar. "Manufacturing's crisis: New technologies, old organizations." Harvard Business Review, (September-October 1988): 77-85.

Hayes, Robert H. and Steven C. Wheelwright. "The dynamics of process-product life cycles." Harvard Business Review (March-April 1979(b)) 77-85.

Hayes, Robert H. and Steven C. Wheelwright. "Link manufacturing process-product life cycles." Harvard Business Review. (January-February 1979(a)): 133-140.

Hirschhorn, Lawrence. Beyond Mechanization: Work and Technology in a Postindustrial Age. Cambridge, MA: The MIT Press, 1984.

Hoover, Edgar M. The Location of Economic Activity. New York: McGraw-Hill, 1948.

Hunt, H. Allan, and Timothy. Human Resource Implications of Robotics. Kalamazoo, MI: Upjohn Institute, 1983.

Jaikumar, Ramnchandran. "Postindustrial manufacturing." Harvard Business Review, 64/6(1986): 69-76.

Johnson, H. Thomas, and Robert S. Kaplan. Relevance Lost. Boston: Harvard Business School Press, 1987.

Kamian, Morton I., and Nancy L. Schwartz. Market Structure and Innovation Cambridge: Cambridge University Press, 1982.

Kassalow, Everett M. "Employee training and development: A joint union-management response to structural and technological change." Proceedings of the Industrial Relations Research Association (December 1987): 107-117.

Katz, Harry C. Shifting Gears. Cambridge, MA: The MIT Press, 1985.

Kelley, Maryellen R. "Programmable automation and the skill question: A reinterpretation of the cross-national evidence." *Human Systems Management*, 6/3(1986): 223-241.

Kelley, Maryellen R., and Harvey Brooks. "The state of computerized automation in U.S. manufacturing." Cambridge, MA: Harvard University, John F. Kennedy School of Government, 1988.

Kraft, Philip. *Programmers and Managers: The Routinization of Programming in the United States*. New York: Springer-Verlag, 1977.

Krumme, Gunter and Roger Hayter. "Implications of corporate strategies and product cycle adjustments for regional employment changes." In Lyndhurst Collins and Davis Walker (eds.) *Location Dynamics of Manufacturing Activities*. New York: Wiley, 1975, pp. 325-356.

Leontief, Wassily and Faye Duchin. *The Future Impact of Automation on Workers*. New York: Oxford University Press, 1986.

Levin, Henry and Russell Rumberger. "The low-skill future of high tech." *Technology Review* (August/September 1983): 18-21.

Liker, Jeffrey K., David B. Roitman, and Ethel Roskies. "Changing everything all at once: Worklife and technological change." *Sloan Management Review* (Summer 1987): 29-46.

Malecki, Edward J. "Technology and regional development: A Survey." *International Regional Science Review*, 8/2(1983): 89-125.

Malecki, Edward J. "High technology sectors and local economic development." In Edward M. Bergman (ed.) *Local F[illegible]s in Transition* Durham, NC: Duke University Press [illegible] 129-142.

Mangum, Garth L. "Curriculum response to occupatio[illegible]" In Gerald G. Somers and J.K. Little (eds.) *Vocational Edu[illegible]ion: Today and*

Tomorrow. Madison, WI: Center for Studies in Vocational and Technical Education, University of Wisconsin, 1971.

Mansfield, Edwin. The Economics of Technological Change. New York: W.W. Norton, 1968.

Mansfield, Edwin and A. Romes. "Technology transfer to overseas subsidiaries of U.S. based firms." Quarterly Journal of Economics. 95(1980): 737-750.

Markusen, Ann R. Profit Cycles, Oligopoly and Regional Development. Cambridge: The MIT Press, 1985.

Menzies, Heather. Women and the Chip: Case Studies on the Effects of Informatics on Employment in Canada. Montreal: Institute for Research on Public Policy, 1981.

Mowery, David C. "The diffusion of new manufacturing technologies." In Richard M. Cyert and David C. Mowery (eds.) The Impact ofTechnological Change on Employment and Economic Growth. New York: Ballinger Publishing Company, 1988): 481-510.

Nabseth, L., and G.F. Ray. The Diffusion of New Industrial Processes. Cambridge: Cambridge University Press, 1974.

National Commission on Technology, Automation and Economic Progress. Technology and the American Economy. Washington, D.C., 1966.

National Research Council (NRC). Center for the Effective Implementation of Advanced Manufacturing Technology, Manufacturing Studies Board, and the Commission on Engineering and Technical Systems. Human Resource Practices for Implementing Advanced Manufacturing Technology. Washington, D.C.: National Academy Press, 1986.

National Science Foundation (NSF). The Process of Technological Innovation: Reviewing the Literature. Washington, D.C.: NSF, 1983.

Nelson, Richard R., and Victor D. Norman. "Technological change and factor mix over the product cycle." Journal of Development Economics. 4(1977): 3-24.

Nelson, Richard R., and Edmund S. Phelps. "Investment in humans, technological diffusion, and economic growth." American Economic Review, Papers and Proceedings, 56/2(1966): 69-75.

Nelson, Richard R., and S.G. Winter. An Evolutionary Theory of Economic Change. Cambridge: Harvard University Press, 1982.

Nemetz, Patricia L., and Louis W. Fry. "Flexible manufacturing organizations: Implications for strategy formulation and organization design." Academy of Management Review 13/4 (1988): 627-638.

Oakey, Ray. High Technology Small Firms. New York: St. Martin's Press, 1984.

Office of Technology Assessment (OTA), U.S. Congress. Automation of America's Offices. Washington, D.C.: U.S. Government Printing Office, 1985.

Office of Technology Assessment (OTA), U.S. Congress. Technology, Innovation and Regional Economic Development. Washington, D.C.: Government Printing Office, 1984.

Office of Technology Assessment (OTA), U.S. Congress. Structural Unemployment: Reemploying Displaced Adults. Washington, DC: U.S. Government Printing Office, 1986a.

Cambridge, ENG: Cambridge University Press, 1982.

Rosenberg, Nathan. Perspectives on Technology. Armouk, NY: M.E. Sharpe, Inc., 1976.

Rosenfeld, Stuart A., Emil E. Malizia, and Marybeth Dugan. Reviving the Rural Factory: Automation and Work in the South. Research Triangle Park, NC: The Southern Technology Council of the Southern Growth Policies Board, 1988.

Rosow, Jerome M. and Robert Zager. Training - The Competitive Edge. Jossey-Bass Publishers, 1988.

Sabel, Charles F., Gary Herrigel, Richard Kazis and Richard Geeg. "How to keep mature industries innovative." Technology Review 90/3(April 1987): 26-35.

Shanklin, William L., and John K. Ryans, Jr. Marketing High Technology. Lexington, MA: Lexington Books, 1984.

Somers, Gerald G. "The response of vocational education to labor market changes." Journal of Human Resources (Supplement 1968): 32-58.

Spenner, Kenneth I. "The upgrading and downgrading of occupations: Issues, evidence and implications for education." Review of Educational Research, 55/ 2,(1985): 125-154.

Spenner, Kenneth I. "Technological change, skill requirements and education: The case for uncertainty." In Richard M. Cyert and David C. Mowery (eds.) The Impact of Technological Change on Employment and Economic Growth. New York: Ballinger Publishing Company, 1988, pp. 131-184.

Starr, Martin K., and Alan J. Biloski. "The decision to adopt new technology - effects on organizational size." In E. Rhodes and D.

Office of Technology Assessment (OTA), U.S. Congress. Technology and the American Economic Transition. Washington, D.C.: U.S. Government Printing Office, 1988.

Osterman, Paul. Employment Futures: Reorganization, Dislocation and Public Policy. New York: Oxford University Press, 1988.

Piore, Michael J., and Charles F. Sabel. The Second Industrial Divide. New York: Basic Books, 1984.

Qualls, William, Richard W. Olshavsky, and Ronald E. Michaels. "Shortening of the PLC -- An empirical test." Journal of Marketing. 45(Fall 1981): 76-80.

Ray, George F. The Diffusion of Mature Technologies. Cambridge: Cambridge University Press, 1984.

Rees, John, Ronald Briggs and Donald Hicks. "New technology in the American machinery industry: Trends and implications." A study prepared for the Joint Economic Committee of Congress, September 1983.

Riche, R.W., D.E. Hecker, and J.U. Burgan. "High technology today and tomorrow." Monthly Labor Review, 1983.

Rink, David R., and John E. Swan. "Product life cycle research: A literature review." Journal of Business Research (September 1979): 219-242.

Roberts, Markley. "A labor perspective on technological change." In Eileen L. Collins and Lucretia Dewey Tanner (eds.) American Jobs and the Changing Industrial Base. New York: Ballinger Publishing Company, 1984, pp. 183-205.

Rosenberg, Nathan. Inside the Black Box: Technology and Economics.

Wield (eds.) Implementing New Technologies. New York: Basil Blackwell, 1985, pp. 303-315.

Taylor, Robert E., Howard Rosen and Frank Pratzner (eds.) Responsiveness of Training Institutions to Changing Labor Market Demand (Columbus, OH: The Center for Research in Vocational Education, Ohio State University, 1983.

Technology Management Center. "The use of advanced manufacturing technology in industries impacted by import competition An analysis of three Pennsylvania Industries." Unpublished report. Philadelphia, PA.

U.S. Department of Labor, U.S. Department of Education, and U.S. Department of Commerce. Building a Quality Work Force. Washington, D.C.: U.S. Government Printing Office, 1988.

U.S. General Accounting Office (U.S. GAO). Dislocated Workers: Extent of Business Closures, Layoffs and the Public and Private Response, (Washington, D.C.: U.S. Government Printing Office, 1986.

Utterback, James M., and William J. Abernathy. "A dynamic model of process and product innovation." Omega 6(1975): 639-656.

van Auken, K.G., Jr. "Personal adjustment to technological change." In Howard B. Jacobson and Joseph S. Roucek (eds.) Automation and Society. New York: Philosophical Library, 1959.

Vernon, Raymond. "The product life cycle hypothesis in a new international environment." Oxford Bulletin of Economics and Statistics. 41/4 (1979): 255-267.

Wasson, Chester R. Dynamic Competitive Strategy and Product Life Cycles. 3rd edition. Austin, TX: Austin Press, 1978.

Wilkinson, Barry. The Shopfloor Politics of New Technology. London: Heinemann, 1983.

Wilms, Wellford W. "The nonsystem of education and training." In Peter B. Doeringer and Bruce Vermeulen (eds.) Jobs and Training in the 1980s. Boston: Martinus Nijhoff Publishing, 1981, pp. 19-49.

8b. INTRODUCING NEW TECHNOLOGY INTO THE WORKPLACE: RETRAINING ISSUES AND STRATEGIES

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Park Row, Inc.

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8b. INTRODUCING NEW TECHNOLOGY INTO THE WORKPLACE: RETRAINING ISSUES AND STRATEGIES

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I. BACKGROUND

Technological advance has changed the methods of production in a wide variety of industries. It has created many situations in which machines can, to some extent, be substituted for workers. In some cases where this substitution takes place, sophisticated machinery is used in place of low-skill workers and in other cases the machinery is used in place of relatively high-skill workers. In almost all cases, however, this substitution requires some retraining of workers. This report summarizes the available information on the best methods for introducing new technology into the workplace. Of particular interest are techniques that can be used for continuously retraining the existing workforce.

The impact of technology on jobs and workers is an enduring and well studied topic (e.g., Burke & Rumberger, 1987; Cyert & Mowery, 1987; Ginzberg, Noyelle & Stanback, 1986; Leontief & Duchin, 1986; Rosenberg, 1966; Rothweel & Zegveld, 1979; Shaiken, 1985). These studies have primarily focused on quantifying the number of workers likely to be displaced by technology or the number of new jobs likely to be created. They have not addressed the central issue of this study which is how to retrain people affected by technology. In particular, the current effort focuses on the impact of three major technologies: computers, robotics and telecommunications. These three technologies are likely to affect most workers in the coming decades.

The remainder of this introductory section summarizes the literature on training for computer, robotic and telecommunications technology. The next section discusses the impact of these three technologies on the workplace in terms of job skills and knowledge. Section III presents a framework for analyzing the retraining needs caused by technology. Strategies for retraining are described in Section IV. The final section outlines conclusions and policy recommendations based upon the preceding analysis.

In general, there is not a lot known about how to best train workers for specific technologies. Most of the studies of how to teach people to use computers have focused on word processing systems in office environments (e.g., Carroll, 1982; Goldstein & Fraser, 1986). These studies suggest that effective computer training must be task-oriented and involve considerable hands-on practice. Studies also indicate that most people have an "action-orientation" when learning to use a computer, i.e., they want to try things out and obtain instruction as needed. It appears that the most common form of computer training on the job is self learning using the documentation provided with the system rather than formal classroom instruction.

By contrast, there has been a sustained effort in this decade to introduce "computer literacy" as a general skill in elementary/secondary education (Seidel, Hunter & Anderson, 1982). While originally conceptualized as a need for all students to learn to program, the focus of computer literacy efforts in today's classrooms is on the use of general purpose programs such as word processing or database programs throughout the curriculum. Thus, there is some reason to believe that the current cohort of students graduating from secondary school are more knowledgeable about computers than earlier graduates and hence will be better prepared to use computers in the workplace.

While there has been a lot of discussion of robotics in the technical literature and popular press, there has been little written about training for robotics. Husband (1986) provides a collection of articles about education and training for robotics. Under the auspices of the Dept. of Education, Office of Vocational and Adult Education, a curriculum for robotic/automated systems technicians (RAST) has been established. In an 1984 survey, there were 56 post-secondary institutions providing RAST programs with another 114 schools offering some form of robotics courses (Hull & Lovett, 1988). On-the-job training for robotics is primarily provided by the robot manufacturers in the form of workshops and short courses. The available evidence suggests that most workers learn to actually operate or maintain robots in the workplace through one-on-one guidance from another employee (e.g., plant engineer) or the manufacturer's representative.

Kearsley (1985a) describes the nature of current training efforts in the telecommunications industry. To address the basic educational needs of telecommunication technicians, the National Telecommunications Education Council, under the auspices of the North American Telecommunications Association, has established a curriculum adopted by many community and technical colleges. On-the-job training is provided by internally-developed courses and some courses provided by equipment manufacturers. "Over the shoulder" training is widely used in the telecommunications industry. Most telecommunications companies are exploring technology-based approaches to training, including computer simulations and video in order to reduce costs and training time.

To summarize, training for technology can be divided into an educational component and an on-the-job component. The education component is addressed by programs at post-secondary institutions (primarily community and technical colleges) and at the primary/secondary level for basic computer knowledge. In the case of robotics and telecommunications, curriculum guidelines have been established for technician courses. On-the-job training involves courses provided by equipment manufacturers as well as company-developed courses. Apprenticeship of one form or another plays an important role in robotics and telecommunications training. A large percentage of on-the-job computer training appears to involve self learning.

Beyond these general conclusions, little detailed information is available about retraining programs or results as they pertain to new technology. We do not know how much retraining is conducted, how and when it is conducted, or what works and what doesn't. Hence, it is necessary to speculate about how retraining for technology might be conducted. These speculations are based upon discussions with individuals responsible for large scale retraining programs in different companies and an understanding of the kinds of skills and knowledge associated with the technologies discussed. To turn these speculations into substantiated facts, it would be necessary to conduct empirical studies of retraining programs in industry and government organizations.

II. THE TECHNOLOGIES

The first step in analyzing the types of retraining needed for technology is to consider the types of new skills and knowledge associated with these technologies.

Computers

Computers, in one form or another, have come to dominate the workplace (Blissmer & Alden, 1988; Anderson & Sullivan, 1988). They affect all levels of workers from the semi-skilled clerk who operates a computerized cash register (technically called a "Point of Sale" system) to the senior manager who uses spreadsheets to do financial projections. Small businesses use personal computers for accounting and billing. In large corporations, computerized systems handle a myriad of functions including employee and customer records, inventory, production control, and almost all financial activities.

Some computer applications have broadly affected many types of people. For example, word processing has required most secretaries, writers, and professionals to become "computer literate." Automated bank teller machines (ATMs) have gotten consumers used to the idea of computerized cash transactions. Airline, hotel, and car rental reservation systems have conditioned the traveling public to information retrieval systems. In short, it is becoming increasingly difficult to function as either an employee or consumer in our society without substantial interaction with computers.

New kinds of software applications may have an even more profound impact on certain jobs and professions. In the engineering profession, Computer Aided Drafting (CAD) and Computer Aided Manufacturing (CAM) systems are dramatically changing the nature of engineering competence. To be a good engineer today, it is necessary to be able to use CAD/CAM systems well. Desktop publishing systems are changing the way all types of publications are created and produced affecting the jobs of printers, graphics designers, editors, and writers. In most large organizations, desktop publishing has changed the workflow and responsibilities of training, marketing, and printing departments.

Expert systems are likely to affect many types of professionals including physicians, financial analysts, lawyers, and managers (Harmon

& King, 1985). Expert systems are also likely to significantly influence most maintenance and service activities. Using expert systems, it becomes possible to package and distribute the experience and judgement of selected individuals or groups. For the first time, it becomes possible to automate (at least partially) the jobs of specialists and senior level employees rather than just entry level positions.

While the number of people employed as programmers is not likely to increase dramatically in the future, the number of people involved in the design and implementation of computer software and systems is projected to increase significantly. Thus, computer-related occupations will become very numerous. Furthermore, there is a clear trend in software towards "extensible" systems that allow users to create their own customized programs using high-level languages. While there may not be an increase in programming as an occupation, it appears that many computer users will engage in some form of programming activity as a normal course of events.

To summarize, the scope and depth of computer skills required by most employees to do their job continues to expand. Historically, computer skills were confined to those individuals directly involved in the computer field (such as programmers or computer operators). Now, a familiarity with computers is needed for many jobs. In the future, it seems likely that almost every employee will need to be retrained to use computers in some fashion.

Robots

In the manufacturing arena, the impact of robotics on jobs has been well documented (e.g., Ayres & Miller, 1983; Hunt & Hunt, 1983; Miller, 1988). Certain types of jobs such as machine operators and trades such as metalworking are subject to significant displacement by robot systems since they involve tasks that the current generation of robots can perform. As robots become more sophisticated, they are likely to impact a wider variety of factory jobs and trades. At the same time, robots create a need for maintenance technicians, programmers, and supervisors. The majority of jobs associated with robotics are technical and require a post-secondary education. This contrasts with the background and educational levels of workers displaced by robotic systems who often have a high school background at best.

Robotics has had a major impact on the engineering profession. Manufacturing and industrial engineers need to understand robotic systems thoroughly in order to design automated factories and products that can be processed properly by robots. In addition, engineers need to understand the electronic and mechanical characteristics of robots in order to develop operating and maintenance procedures.

Even without robots, the factory floor is undergoing a major transformation due to increased computerization. Microprocessor controlled sensors and switches allow manufacturing processes to be controlled by programs rather than the human eye. Operators often monitor production by watching computer displays rather than the actual assembly lines. Managers study print-outs from Manufacturing Report Programs (MRPs) to assess quality control and production problems. Together, all of these developments in technology have dramatically altered the nature of factory work for skilled, unskilled, and professional employees.

Telecommunications

The impact of telecommunications technology is more subtle than either computers or robotics, but equally pervasive. Consider the impact of cellular telephone service; it has created new marketing, maintenance, installation, and service opportunities. Major changes in transmission technologies such as fiber optics satellites, and ISDN (digital networks) are creating needs for new engineering, maintenance and service procedures. Ultimately, the impact trickles down to all employees and consumers when they start to use these new technologies.

Much of this impact is felt directly in the business world. For example, facsimile devices have become popular very quickly in medium and large-sized companies. This means that most employees now need to learn how to operate a fax machine as a general office skill. In the meantime, telephones are becoming more complex due to added features such as answering machines, call forwarding, automatic dialing, conference calling, etc. Since there is rarely any formal training provided for these systems, people must teach themselves using any documentation provided by the equipment manufacturer.

Computer networks (which combine computer and telecommunications technology) are likely to affect many people. For example, electronic mail is becoming widely used in the scientific community and in large organizations for day-to-day communication. Videoconferencing (which blends television and telecommunications technology) becomes more popular as satellite transmission costs decrease. Computer networking and videoconferencing technologies change the way people interact and are managed (Hiltz, 1984).

Extent of Impact

Computers, robotics, and telecommunications technologies could broadly alter the nature of work at all levels over the next decade. While technology change is nothing new, the magnitude of the change caused by these three technologies is. A large proportion of the U.S. workforce is likely to be affected in some way by one or more of these technologies, resulting in a major overhaul of job skills and responsibilities across all occupations. This could produce retraining needs of epic proportions, similar in magnitude to the introduction of electricity or automobiles. However, unlike past technologies, the new information age technologies are likely to become entrenched faster and affect more people (Naisbitt, 1980; Toffler, 1980). What we do not know is how many people will be affected or exactly how.

It is worth noting that retraining is not only the solution to meeting new job requirements caused by technology. Many organizations will lay off or retire existing employees and replace them with workers who are already trained in the technologies involved. However, most organizations recognize that this is a more expensive strategy in the long-term than retraining (Rosow & Zager, 1987). Companies may also relocate in order to tap a better trained labor pool. This is also likely to be more expensive than retraining. Even if companies follow alternative strategies to retraining, the displaced workers still have to find jobs and hence deal with retraining on an individual basis.

III. RETRAINING NEEDS

The introduction of technology into the workplace can have three general effects in terms of impact on employees: skill twist, deskilling, and upskilling. Each one of these effects has different implications for retraining.

Skill Twist

Skill twist refers to the change in required job skills when technology is introduced; old skills are displaced by new ones. For example, when robots are used for assembly of components instead of human operators, manual assembly skills are displaced by the need for robot maintenance and supervision skills. When CAD/CAM is used for engineering applications, drafting skills are no longer needed but an understanding of computer graphics and output devices (e.g., plotters) is necessary. When an organization switches to fiber optic or digital telecommunications, installation and service skills change from analog to digital circuits.

Skill twist situations are usually problematic from a retraining perspective because the new skills and knowledge required is usually quite different from the old. This raises the issue of whether the existing worker has the ability/inclination to learn such different skills. For example, the physical skills of assembling, welding, or riveting are totally different from the mental skills of robot programming, maintenance and design. The type of testing and installation associated with digital communications is quite different from those involved in analog telephony. Word processing and desktop publishing involve a lot of abstraction and conceptualization tasks compared to the physical and concrete operations of typewriters and typesetting equipment. Employees caught in skill twist situations often require lengthy re-education starting with the basic concepts of the new technology.

Deskilling

Deskilling describes the situation in which new technology reduces the level of skills required to do a job. For example, when a robot is used to spray paint, the human operator may only be needed as a caretaker to refill paint tanks, replace nozzles, and clean up the work site. When point-of-sale systems are installed in fast food restaurants, the counter attendants only need to push the right buttons -- the system takes care of totaling the bill, calculating change, and placing the order with the kitchen. With an automated teller machine, all cash transactions are performed by the system; a human operator is needed only to load cash and remove deposit envelopes.

One common effect of deskilling is that the employee takes on a broader range of simpler tasks. Because automation reduces the amount of attention and time needed for each task, it is possible to assign more tasks to a given worker. Thus, deskilling may create the situation where the employee has greater responsibility in terms of scope of activities even though each activity is relatively simple.

Deskilling can have significant emotional consequences since the employee may suffer loss of self-esteem due to reduction of job responsibility and challenge. Indeed the employee's job may be downgraded from a skilled position to a semi or unskilled position with corresponding pay decrease. Under these circumstances, reassignment (or even termination) may seem more preferable to the employee than retraining. However, without retraining, displaced workers are not likely to do any better. For example, an OTA study reports that half of the workers who found jobs after layoffs experienced pay cuts (Office of Technology Assessment, 1987).

Upskilling

Upskilling occurs when technology increases the level of skills required to do a job. When a secretary or writer starts using a desktop publishing program, knowledge of page layout, typography, and printing will be needed. When a manager or scientist starts to use electronic mail or online databases, a general understanding of computer communications is required. When a factory supervisor is asked to monitor robots, new set-up, safety and troubleshooting procedures are involved.

Upskilling means that the employee must learn new skills that extend their present tasks and responsibilities. There is a danger that employees may become overloaded and highly stressed as they try to accommodate the new tasks. Furthermore, any training needed must fit into the existing job regime since the new tasks are likely to build upon the old. An engineer learning to use a CAD/CAM system must still turn out specifications even while learning; a nurse must still keep proper records while learning how to use a patient management system; a manager must still keep a project on track while learning to use an electronic conferencing system.

Nature of Retraining Needed

The nature of the retraining required will vary with the way the new technology affects the job. In the case of skill twist, the retraining is likely to be lengthy and involve fundamentally new knowledge. Retraining of this type is likely to require a full-time learning program spanning many months or years. Deskilling situations may involve little formal training but considerable employee counseling. Upskilling requires ongoing training programs that can fit in with the job, either as on-site training or continuing education programs.

Regardless of the nature of the retraining involved, most training associated with technology will require considerable "hands-on" activity. Learning to use computers, robots or telecommunications involves procedural skills and knowledge that are best acquired while practicing with the equipment (either actual or simulated). For this reason, traditional classroom instruction (i.e., lecture or seminars) has limited utility in training for technology unless it is supplemented by laboratory sessions (Seidel & Kearsley, 1987).

It is also important to emphasize that retraining programs of any type deal with adult education. This means the use of teaching activities that build upon the experiences of the learner and involve group interaction (Knowles, 1984). Credibility of instructors and fidelity of the instructional materials is also critical. The relevance of the instruction to the career goals of students needs to be clear to maintain interest and motivation.

The distinction between a skill twist, deskilling or upskilling situation for a given job will depend upon the individual. What represents a skill twist for one person may be an upskilling situation for another, or vice-versa. For example, the switch to CAD/CAM may not be a major change for a young engineer already familiar with computers but may involve totally new skills for an older engineer with no computer experience. Furthermore, a job may be redefined so that it involves a combination of deskilling, skill twist, and upskilling aspects (Kraut, Dumais, & Koch, 1989). Assessments of retraining needed must be specific to the employee and the job.

Employee Characteristics

Regardless of what kind of retraining situation is involved, there are some general characteristics of technology that create similar skill demands across all jobs (see Carnevale et al., 1988). Using and understanding technology requires a problem-solving, methodological type of ability. To successfully work with hi-tech systems, it is necessary to analyze and reason about why things work or don't work. Because most hi-tech systems are complex to operate and maintain, a lot of documentation is involved. This requires good reading skills. Finally, hi-tech equipment tends to have short life cycles. For example, most computer systems (both hardware and software) tend to last only 3-5 years before being replaced. Consequently, the retraining process can be frequent -- occurring regularly every few years. Indeed, in some professions such as medicine, engineering or data processing, the half-life of job knowledge is only 2-3 years and continuous retraining is necessary (Bell, 1976).

Employees need to have a high level of basic literacy (reading/writing/listening) skills to cope satisfactorily with retraining needs. In addition, they need to have good problem-solving and reasoning skills. Certain personality characteristics (e.g., flexibility, high self-esteem) are also critical to the retraining process. However, the most fundamental ability necessary for retraining is the willingness to learn. Technological change demands an almost constant state of learning. Workers at all levels must be able to deal with this. Clearly, this presents problems for that portion of the population that has been turned off by formal education programs.

Organizational Effects

While most of the analysis so far has focused on the individual, retraining needs can also have profound effects on the entire organization. When a significant number of jobs are redefined (or a single job held by many employees), the way the company operates must also be changed. Planning for and implementing retraining can take significant effort and involve many departments and levels of management (Miller, 1989).

By way of example, consider what happens when an aerospace company wins a large contract for a new fighter plane or space vehicle. Hundreds of engineers, scientists, technicians, and manufacturing workers are reassigned or hired. An equal number of administrative staff, managers, and consultants are probably involved. There is a sudden and acute demand for retraining as the technical staff tries to assemble the skills and knowledge needed to carry out the new project. This can range from CAD or automated manufacturing expertise to basic management or communication skills. Retraining activities may extend for years in a lengthy project. When the project is completed, many of the employees will face reassignments or layoffs and possibly a new cycle of retraining.

This example highlights one of the fundamental issues of the retraining problem: who has primary responsibility for retraining -- the individual or the organization? Clearly, organizations are in a position to predict their work force requirements and hence plan retraining programs that meet these needs. However, organizations are not compelled to retrain unless it makes economic sense. In so far as retraining improves the employability and earning power of an individual, it would seem to be a personal matter. In many cases, retraining is initiated by individuals, with or without the support of their employer. In skill twist and deskilling situations, it would seem that responsibility for retraining lies primarily with the organization whereas in upskilling situations, the responsibility is typically borne by the individual.

At the present time, relatively few organizations have devoted significant attention to retraining needs and issues. Motorola provides an example of a company that has specifically focused on retraining by creating a Center for Continuing Education with a mission to provide retraining for employees at all levels (Galagan, 1986). On the hand, many companies only develop retraining programs to respond to acute events -- such as a plant shutdown or major new products/projects. Clearly, there are different types of organizational responses to retraining just as there as different types of individual needs.

IV. STRATEGIES FOR RETRAINING

A variety of different strategies are needed to deal with the retraining problems just discussed. Like most complex sociotechnical issues, no single strategy or approach will work. A successful retraining plan or policy will require attention to multiple dimensions simultaneously.

Lifelong Learning

The concept of schooling that is still prevalent in the minds of most workers (including educators) is the "red schoolhouse" model -- education is something accomplished when young through mandatory school attendance. It is completed upon entering the workforce. However, this model no longer matches reality for a large portion of the population engaged in "continuing education". Almost every college and university in the U.S. has an active extension program during the evenings and weekends.

The continuing education programs provided by community colleges and university extension departments address retraining needs of the skill twist type where dedicated learning activities are needed. Such programs tend to be fairly responsive to technological change and are usually taught by professionals at the forefront of such technology. For example, soon after robotics became a major force in U.S. manufacturing in the early 1980's, colleges began to offer a wide variety of robotics technician courses. Similarly, programs in areas such as CAD/CAM, desktop publishing, NMR Spectroscopy, fiber optics, etc. appeared shortly after these technologies showed up in the workplace.

As the population ages, colleges and universities will increasingly focus on continuing education programs, driven by market forces to keep their institutions alive. The main problem with this form of retraining is the question of who pays. Individuals engaged in full-time retraining do not usually have the money to cover their tuition and living expenses. It is necessary for the employer, union or government to pay these costs, either through direct subsidy or via loans. Otherwise, the worker is likely to settle for unemployment benefits and any job that can be obtained.

Technology Based Training

Retraining is a normal course of events for any company that markets new products on a regular basis. For example, every year all of the automotive companies must retrain their entire sales and service staff about the new models. Consumer electronics, computer, and telecommunications companies are continually introducing new products that require large-scale retraining of their workforce. The U.S. military is constantly upgrading its weapons systems and retraining its personnel. The majority of these retraining programs focus on upskilling in the context of organization-specific products, services, or procedures.

Even though retraining is business as usual for all of these organizations, there are many problems. The pace and magnitude of technological change makes retraining via traditional classroom means, more expensive and more lengthy than many organizations can afford. There is also an information overload problem. The amount of information that employees may need to know in order to do their job is beyond their capacity. Furthermore, the basic literacy skills of many employees are weak making it difficult for them to retrain quickly.

In response to these problems, training departments have begun to look for new instructional techniques and/or delivery mechanisms. Computer-based instruction which has been shown to reduce the amount of training time significantly relative to classroom instruction is one avenue being explored. Interactive video which can minimize the reading level requirements and increase the motivation for learning, is being examined. Systems that reduce the need for formal training programs are being tried. Video and audio conferencing methods are being used to reduce the need for travel to training sites. In short, industry is attempting to use technology itself to deal with the increased retraining needs caused by technology (see Kearsley, 1985b).

Professional Organizations

Many professionals including health care workers, engineers, scientists, lawyers, architects, educators, and financial analysts receive a major portion of their retraining from attendance at conferences or workshops sponsored by professional organizations they belong to. Such meetings provide information on very specialized topics and tend to cover new developments before they are widely disseminated. They may be held nationally or regionally and deal with global or local concerns.

The quality of retraining received by professionals through this channel has important side effects on the continuing education programs offered by colleges and universities in so far as a large proportion of the instructors are drawn from the ranks of professionals. If attendance at professional meetings improves the knowledge of professionals about new technology, this will be reflected in the courses they teach.

The major problem with this channel of retraining is that it does not reach all professionals equally. Some professionals are reluctant to take the time or spend the money needed for attendance at meetings.

Professionals in metropolitan centers tend to have more opportunities for workshops and meetings than those in outlying areas. There is a need to make participation in these activities more independent of geography and time schedules. Packaging these meetings in video form would help, as would the use of video/computer conferencing.

Vendor Training Materials

In many cases, the technology that necessitates retraining is supplied by an outside vendor who carries some or all of the responsibility for training. This training varies considerably in quality depending upon the importance the vendor and customer accord to it. Often the training is poorly produced or delivered since it is viewed by the vendor as an expense that detracts from profits. Ironically, vendor training is frequently the main form of retraining provided, especially in upskilling situations where no other training is available to the employee.

Some vendors have attempted to provide high quality training at an affordable cost by exploring multimedia self-study approaches. These training packages consist of workbooks, videotapes, and sometimes, computer-based instruction modules, that allow employees to learn on the job at their own pace. Such self study approaches avoid the cost of instructors and training facilities, (although they can be expensive to develop) and match the needs of employees and employers for on-site retraining.

Quality and acceptability of vendor materials is usually judged by the customer, i.e., the organization that purchases the training. However, since the organization often has no expertise in the training area, it is a poor judge of the training quality. Instead, training programs and materials need to be reviewed and approved by professional organizations. In addition, certification exams tied to explicit competencies would assure that vendor training meets acceptable standards. Training courses and materials developed for Department of Defense and government agencies often must meet well-defined specifications and hence are better in quality than courses and materials developed strictly for the commercial sector. This suggests that standards can have a positive effect in improving training materials.

Affordability, Accessibility and Effectiveness

To summarize this discussion of retraining strategies, there are a number of different ways in which retraining for technology can be accomplished, none of which appear to be very effective at present. Continuing education programs provided by colleges and universities address the retraining needs involved in skill twist situations. The major obstacle to this form of retraining is funding. The workers who most often need such retraining (i.e., blue collar, lower middle class) are least able to afford it.

To meet the upskilling type of retraining needs, companies are exploring a variety of technology-based training approaches that can overcome the time and geographical limitations associated with learning on the job. In addition, vendors are increasingly turning to multimedia training materials for the same reason. Professionals receive much or their retraining via attendance at meetings -- an approach which produces uneven results across the workforce. Many professionals are reluctant to take the time necessary to participate in such meetings, especially when it will involve significant travel.

For some workers, primarily those caught in skill twist situations, the major problem with retraining is one of affordability. The training programs exist but without financial assistance they simply have no way to pay for them. For other workers, the problem is not money but accessibility. In many upskilling situations, employees can not find the time to go to training programs that they desperately need. The solution for these people involves bringing the training to the employee. Finally, there is the problem of effectiveness; many of the vendor supplied courses and materials used for retraining do not work well. Standards for on-the-job training are necessary to ensure that courses and materials accomplish what they are supposed to teach.

To address the retraining problem brought about by the emergence of new technologies in the workplace, we need private and government programs that deal with the affordability, accessibility, and effectiveness issues. The next section provides conclusions and recommendations along these lines.

V. CONCLUSIONS & RECOMMENDATIONS

For employees affected by a skill twist situation, the continuing education system provides a satisfactory retraining approach provided that the employee has the necessary literacy and motivation to attend classes. The cost of tuition and living expenses needs to be borne by the employer, union or government since in most cases, the individual can not afford to go to school without a subsidy. Tax incentives for employers and employees and/or educational loans seem essential to make this approach succeed.

Policy options:

1. Recreate the tax incentives previously available to individuals and organizations for educational programs.

2. Create an educational loan program specifically for adults who are entering retraining programs.

3. Require companies/unions to provide salary as well as tuition assistance for employees who enter retraining programs.

Employees in upskilling situations depend primarily on training provided by their own organization or a vendor. This an area where technology-based training approaches could lead to improvements in retraining success. The use of computer-based instruction, interactive video, and multimedia materials has been shown to save training time and provide more motivating instruction. However, development and implementation of hi-tech training is expensive and requires considerable expertise. More support for technology-based training approaches from senior management within organizations is needed to increase its popularity. Leadership by government agencies in this area would be a valuable contribution.

Policy Options:

4. Designate a certain proportion of training funds in government agencies for the use of technology-based training approaches.

5. Increase the technological sophistication of government training specialists so they are able to initiate and manage technology-based training projects.

6. Provide matching funds to state agencies or private corporations to explore technology-based training projects.

A significant problem with the training courses and materials provided by vendors in the commercial sector is that they do not have to meet any objectively defined quality criteria. This could be improved through certification testing under the jurisdiction of unions, professional organizations or state agencies. For example, to be certified to operate or maintain robots a technician would need to pass a test associated with that class or level of robots. This would be much the same as a mechanic's or pilot's license. Such standards would force vendors to develop courses and materials according to an explicit level of quality.

Policy Options:

7. Work with professional organizations, unions or state agencies to develop voluntary competency standards for computer, robotic, and telecommunications technicians.

8. Establish legislation that requires government agencies to certify computer, robotic and telecommunications technicians.

9. Create federal standards for computer, robotics, and telecommunications technicians employed by government agencies.

Professional retraining is largely addressed by attendance at meetings and workshops under the auspices of professional organizations, a system which works but produces inequities in who gets retrained. Better methods of disseminating the proceedings of such meetings are needed. Video and computer conferencing technologies could ultimately alleviate geographical obstacles but further development of the technology is needed in terms of cost and usability. This an area that needs more private and public funded R&D.

Policy Options:

10. Provide R&D funds through an appropriate agency such as NSF, OSHA or NIH for projects that demonstrate the successful use of conferencing technology in professional and technical education.

11. Direct government labs to work with professional organizations to explore more effective means of disseminating their activities and results.

12. Require that a certain percentage of government travel budgets for professional activities be spent on alternative approaches involving conferencing technology.

There is one group of workers that is not covered by the preceding discussions: employees who experience deskilling as a result of technology and who are unable or unwilling because of literacy or motivational problems to participate in formal retraining programs. In many cases, such employees will be minorities, economically disadvantaged, or older workers. These individuals need special counseling attention to direct them to literacy programs, financial support, or retirement programs that best match their needs. Such counseling services are provided on a piecemeal and ad-hoc basis by state/local agencies, unions, and companies. There is a need for a more structured and better funded nation-wide counseling program. The development and coordination of such a program is an area needing federal resources.

Policy Options:

13. Legislation should require that every organization provide each employee with a certain minimum amount of career counseling on an annual basis or in the event of a layoff/termination.

14. A nation-wide vocational information database should be established and maintained by the Dept. of Labor.

15. A federal clearinghouse for information on literacy programs is needed.

There are a number of additional recommendations that go beyond the scope of this report but are closely related to retraining issues. Unemployment insurance is an obvious source of subsidy for workers undergoing retraining -- however, benefits do not last long enough to cover a worker through most retraining programs. Some states such as California have supplemental insurance programs that extend benefits for individuals engaged in full time retraining. A rethinking of the nature and implementation of unemployment insurance programs is required to facilitate retraining on a large scale.

In conducting this study, it was noted that there is no entity within the Department of Labor specifically concerned with retraining policy or issues. In fact the only agency explicitly tasked to address retraining is the Department of Education, Office of Vocational and Adult Education. There needs to be a closer and more direct liaison between the Department of Labor and the Department of Education in this regard. A coordinated policy that links educational availability and workforce productivity is needed if appropriate retraining programs are to be implemented.

Lastly, there is a paucity of data on the nature and effectiveness of retraining programs. The information that is available generally reports the success rates in terms of job placements (e.g., Somers, 1968). There is very little description of what retraining strategies work or how retraining is actually accomplished. In order to formulate detailed recommendations about how to implement retraining programs, such qualitative data is needed. A series of case studies or a comprehensive survey that examines success factors in retraining programs would provide the basis for more cogent analysis of retraining problems and solutions.

REFERENCES

Anderson, R.E., and David Sullivan. The World of Computing. Boston, MA: Houghton Mifflin, 1988.

Ayres, R.U. and S.M. Miller. Robotics: Applications and Social Implications. Cambridge, MA: Ballinger, 1983.

Bell, Duran. "The Role of Education in Facilitating Adoption to Technological Change." R-1821-NSF. Santa Monica, CA: Rand Corp., 1976.

Blissmer, R.H. & Roland Alden. Working with Computers. Boston: Houghton Mifflin, 1988.

Burke, G. and Russell W. Rumberger. The Future Impact of Technology on Work and Education. Philadelphia, PA: Falmer Press, 1987.

Carnevale, A., Gainer, L., Meltzer, A. and S. Holland. "The Skills Employers Want." Training and Development Journal (October 1988): 23-28.

Carroll, J.M. "The Adventure of Getting to Know a Computer." IEEE Computer, 15 (1985): 49-58.

Cyert, R.M. and D.C. Mowery. Technology and Employment. Washington, DC: National Academy Press, 1987.

Galagan, P. "Focus on Results at Motorola." Training and Development Journal, May 1986, 43-46.

Ginzberg, E., Noyelle, T. and T. Stanback. Technology and Employment. Boulder, CO: Westview Press, 1986.

Goldstein, H. and Fraser, B. "Training for Work in the Computer Age." Report RR-85-09. Washington, DC: National Commission for Employment Policy, 1986.

Harmon, P. & King, D. Expert Systems: Artificial Intelligence in Business. NY: Wiley, 1985.

Hiltz, S.R. Online Communities: A Case Study of the Office of the Future. Norwood, NJ: Ablex, 1984.

Hull, D.M. and J.E. Lovett. "Training of Robotics Personnel." In R.C. Dorf (ed.), International Encyclopedia of Robotics. New York: Wiley, 1988.

Hunt, H.A. and T.L. Hunt. Human Resource Implications of Robotics. Kalamazoo, MI: Upjohn Institute, 1983.

Husband, T.M. Education and Training in Robotics. UK: IFS Publications Ltd., 1986.

Kearsley, G. "High-Tech Training." ComputerWorld On Communications (August 1985a): 35-38.

Kearsley, G. Training for Tomorrow: Distributed Learning Through Computer and Communications Technology. Reading, MA: Addison-Wesley, 1985b.

Knowles, M. The Adult Learner. Houston, TX: Gulf Publishing, 1978.

Kraut, R., Dumais, S. & Koch, S. "Computerization, productivity, and quality of worklife. Communications of the ACM, February 1989, 32(2):220-238.

Leontief, W. and F. Duchin. The Future Impact of Automation on Workers. New York: Oxford University Press, 1986.

Miller, K. Retraining the American Workforce. Reading, MA: Addision-Wesley, 1989.

Miller, S.M. Impacts of Industrial Robotics: Effects on Labor and Costs in the Metalworking Industries. Madison, WI: University of Wisconsin Press, 1988.

Naisbitt, J. Megatrends. NY: Warner Books, 1982.

Office of Technology Assessment, U.S. Congress. Technology and Structural Unemployment: Reemploying Displaced Adults. Washington, DC: GPO 052-003-01017-8.

Rosenberg, J.M. Automation, Manpower, and Education. New York: Random House, 1966.

Rosow, J.M. & Zager, R. Training for New Technology. Scarsdale, NY: Work in America Policy Study Institute, 1987.

Rothweel, R. and W. Zegveld. Technical Change and Employment. London: Francis Pinter Ltd. 1979.

Seidel, R., Hunter, B. & Ronald E. Anderson. Computer Literacy. New York: Academic Press, 1982.

Seidel, R.J. & Kearsley, G. The Impact of Computers on Human Learning. In J. Zeidner (Ed.), Human Productivity Enhancement, Volume 1. NY: Praeger, 1986.

Shaiken, Harley. Work Transformed: Automation and Labor in the Computer Age. New York: Holt, Rinehart and Winston, 1985.

Somers, G. Retraining the Unemployed. Madison, WI: University of Wisconsin Press, 1968.

Toffler, A. Future Shock. NY: Random House, 1980.

9. SURVEY OF GOVERNMENT-PROVIDED TRAINING PROGRAMS

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1. Introduction

Jobs in the U.S. economy today frequently require workers who have mastered basic skills in reading and arithmetic, and many positions also require technical or vocational skills. Members of the labor force can acquire these skills in a variety of settings -- in high schools, community colleges, private two-year institutions, four-year colleges, special government training programs, and through formal or informal training provided by employers themselves.

This paper provides an overview of federally sponsored training programs. As is documented below, the federal government provides training to workers in over a dozen major programs. Many of these programs provide similar types of training but serve special target groups that are identified by economic status, the reason why training is needed, or by particular barriers to employment. To assess the adequacy of the current system, it is important to first consider the range of programs offered and the characteristics of each program. For the major programs identified, we discuss the level of federal support, the eligibility requirements for the program, the characteristics of the participants, and the types of training provided.

Unfortunately, there are many gaps in the available data. Although federal expenditures are available for all the programs of interest, we were not always able to identify the funds spent specifically on training for programs that provide services in addition to training. Data on the characteristics of participants vary considerably across programs. In some cases, detailed data about the participants and the type of training they receive are available, but for one major program (vocational education), we were unable to obtain estimates of the number of participants served.

An important issue for this study is the definition of training. Although any definition of training focuses on the acquisition of skills, the term training can be defined narrowly, to include only situations where vocational skills are taught in a classroom setting, or broadly, to include remedial and basic skills instruction, informal instruction by employers, and supportive activities such as job search assistance. Thus, the definition must address the issues of content and setting.

For this report, we will use the definition provided by the U.S. Department of Education for vocational education in the 1988 Digest of Education Statistics as the core definition of training: training is defined as coursework, either full- or part-time, in an occupational or technical field for the purpose of obtaining a vocational credential, such as a vocational certificate, occupational license, or other vocational diploma or degree. This definition differs from the definitions used by some government agencies, but it will enable us to identify training as the term is perhaps most commonly understood.

Many government programs provide activities and services that almost meet the definition provided above, and such activities are sometimes (but not always) classified as training by the agencies. Wherever possible, we have included these activities in the report, especially when they are provided along with vocational classroom training, but we have tried to distinguish them from training that meets our core definition of training. Examples of these related activities include:

- Basic skills and remedial education. These programs provide participants with classroom instruction in reading, arithmetic, and other academic skills. The programs are often intended to lead to a GED or high school diploma.

- On-the-job training. These programs consist of employment opportunities with individual employers. The employer typically receives a payment of 50 percent of wages paid to the participant for the first six months of employment to cover the cost of formal and informal training.

- Work supplementation and grant diversion. These programs are operated through AFDC programs, and they are similar to on-the-job training. Under these programs, AFDC funds are used to subsidize employment experiences with nonprofit and for-profit employers for a limited period of time. The programs are intended to provide informal training to the participants, with the goal of having employers retain the participants after the subsidies expire.

- Work experience and community work experience programs (CWEP). Work experience programs operated under the Job Training Partnership Act and CWEP programs operated under AFDC programs provide work experience for participants with government or nonprofit agencies and organizations. Work experience participants in JTPA programs generally are paid the minimum wage. In CWEP programs, the participants are not paid and are considered to be performing the work in exchange for the AFDC benefits. A goal in both programs is for the participants to gain work experience that will help them qualify for an unsubsidized job.

- Job search assistance. Job search assistance is provided to participants in JTPA, AFDC, and Food Stamp programs to help the participants improve their job search methods. These programs typically do not provide occupational training.

There are some government programs that we have excluded because they are beyond the scope of this report. Among these are:

- The employment service. The employment service (or job service) provides assistance to individuals seeking employment. The program is operated through state employment security agencies. The employment service operates primarily as a labor exchange, and it takes job orders from employers and refers qualified workers to relevant openings. In addition, the employment service provides testing, counseling, and assessment of applicants.

- Apprenticeship. The Bureau of Apprenticeship and Training works with the private sector in certifying apprenticeship programs and promoting the concept of apprenticeship. However, the government does not sponsor or fund the training of apprentices.

- Regular schooling and adult basic and remedial education. We have omitted programs that are solely oriented toward providing educational skills and credentials. Thus, high school programs leading to a diploma, postsecondary programs leading to a baccalaureate degree, and adult education programs leading to a GED or other educational credentials are not included in the study.

- State and local training programs. Programs funded entirely by state and local governments are not included in the study. However, programs that are partially or fully funded by the federal government are included, even if they are administered at the state or local level.

- Government training of civilian and uniformed personnel. The federal government provides training for civilian employees (e.g., general management training and training for air traffic controllers) and for members of the armed forces. These programs are excluded from the report.

The next eight sections of the report provide information about the major federally funded training programs. Section 10 provides a summary and conclusions.

2. The Job Training Partnership Act

The Job Training Partnership Act (JTPA) authorizes the nation's major employment and training program for individuals with specific labor market needs. JTPA was passed in 1982 to replace the Comprehensive Employment and Training Act (CETA), and the programs began operation in 1983. The specific programs established by JTPA are authorized in Titles II, III, and IV of the Act, and each of the major programs is described below. The major JTPA programs include training services for economically disadvantaged youth and adults (Title II-A), the summer youth employment and training program (Title II-B), employment and training services for dislocated workers (Title III), employment and training programs for native Americans and migrant and seasonal farm workers (Title IV-A), the Job Corps (Title IV-B), and veterans' employment and training programs (Title IV-C). Each of the JTPA programs have specific eligibility requirements, although an individual may qualify for more than one program.

2.1 Training Services for Economically Disadvantaged Youth and Adults

The training programs for economically disadvantaged youth and adults are authorized by Title II-A of JTPA. To be eligible for the program, an individual must meet one of five criteria for being considered economically disadvantaged: (1) receives, or is a member of a family which receives, cash welfare payments; (2) has, or is a member of a family which has, family income for the six-month period prior to application which, in relation to family size, was not above the higher of the poverty level set by the Office of Management and Budget or 70 percent of the lower living standard income level; (3) is receiving food stamps; (4) is a foster child on whose behalf state or local payments are made; and (5) is an adult handicapped person whose own income meets one of the first two criteria. In addition, in each local service delivery area, up to 10 percent of the participants enrolled may not be economically disadvantaged if they have other barriers to employment. The Act gives as examples displaced homemakers, school dropouts, teenage parents, handicapped individuals, older workers, veterans, offenders, substance abusers, and individuals with limited English proficiency.

For program year 1987 (July 1, 1987 through June 30, 1988), expenditures for the Title II-A program were $1.9 billion.[1] The statute requires that at least 70 percent of the funds be spent on training (rather than administration, needs-based payments, and support services), but under certain circumstances these limits may be waived.[2] During PY 1987, 796,600 participants enrolled in Title II-A programs, and 763,900 terminated.[3] Nearly 1.1 million individuals were served by local service delivery areas in PY 1987. The number of participants on board at the end of each quarter ranged from 333,200 to 448,100 participants. The median length of stay for Title II-A participants in PY 1987 was 14.6 weeks.

The characteristics of Title II-A enrollees and terminees in PY 1987 are presented in Table 1 and Table 2. The more detailed data in Table 1 are based on a probability sample of local programs, and the data in Table 2 are from administrative data. Slightly more than half of the participants were women. The statute requires that at least 40 percent of the funds be spent on youth under age 22, so it is not surprising that slightly over 40 percent of the participants are youth. Slightly over fifty percent of the participants are white non-Hispanics, about one third are black non-Hispanics, about one-eighth are Hispanics,

TABLE 1

DISTRIBUTION OF TITLE IIA ENROLLEES IN EACH INITIAL PROGRAM ASSIGNMENT BY SELECTED CHARACTERISTICS: PARTICIPANTS NEWLY ENROLLED IN JTPA DURING PY 1987 (JULY 1987 - JUNE 1988)

	Initial Program Assignment					
Selected Characteristics	**Total**	**CT[1]**	**OJT**	**JSA**	**WE**	**Other Services**
Total Enrollees	796,600	286,000	170,900	153,800	54,900	131,000
Sex						
Male	47	37	57	54	47	51
Female	53	63	43	46	53	49
Minority Status						
White (excluding Hispanic)	53	48	62	53	49	56
Black (excluding Hispanic)	32	36	25	34	37	32
Hispanic	11	13	11	10	12	8
Other	3	3	3	3	3	4
Age at Enrollment						
Younger than 19	26	24	10	19	59	45
19-21	15	14	18	15	16	12
22-29	26	27	34	26	11	18
30-34	24	27	29	26	8	17
45-54	5	5	5	6	3	5
55 and older	4	3	4	8	3	3
Economically Disadvantaged	93	93	94	92	95	93
Unemployment Compensation Claimant at Application	5	4	6	6	1	4
Participants Not Working During the 26 Weeks Prior to Application	54	60	41	53	60	55
Handicapped	11	10	7	12	21	13
Veteran at Application	8	5	11	11	2	7
Receiving Public Assistance at Application						
AFDC	23	31	15	18	18	19
Cash Public Assistance (AFDC, General, Refugee, SSI)	29	38	20	27	22	24
Food Stamps	31	38	27	28	24	30
Any public assistance (cash and/or noncash)	41	50	34	38	34	40
Adult Welfare[2]	17	25	13	16	6	10
Other Adult Assistance	9	9	13	10	4	8
Youth (age <22)	15	16	8	11	24	22
Average Monthly Amount (all types of assistance)[3]	$314	$326	$299	$310	$289	$304
Education Status						
School dropout	27	33	25	26	17	23
Student (HS or Less)	18	13	5	13	55	36
High School Graduate or Equivalent (no post HS)	39	40	50	41	20	28
Post High School	16	14	20	20	9	14

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[1] Program assignments include classroom training (CT), on-the-job training (OJT), job search assistance (JSA), and work experience (WE).

[2] Receiving AFDC, General Assistance and/or Refugee Assistance and at least 22 years of age at enrollment.

[3] These data items are not available prior to the second quarter of PY 1986.

Source: U.S. Department of Labor, Division of Performance Management and Evaluation, Office of Strategic Planning and Policy Development. Summary of JTQS Data for JTPA Title IIA and III Enrollments and Terminations During PY 1987 (December 1988).

TABLE 2

DISTRIBUTION OF PY 1987 TITLE II-A TERMINEES FOR YOUTH AND ADULTS BY SELECTED CHARACTERISTICS

	Adults	Youth
Total Number of Terminees	447,000	371,000
Male	55%	50%
Female	46	50
Age 55 and Over	4	--
Dropout	27	27
High School Graduate	73	32
Welfare	29	23
Single with Dependent under 18	30	0
White	54	44
Black	30	37
Hispanic	12	16
Alaskan/American Indian	1	1
Asian/Pacific Islander	2	2
Handicapped	9	13
Limited English	5	4
Unemployment Insurance Claimant	8	1
Unemployed 15 or More Weeks of Prior 26	50	--

Source: Unpublished Department of Labor data based on JTPA Annual Status Reports (JASR).

and about 3 percent belong to other ethnic groups. The participants displayed a wide range of educational backgrounds. Over one-quarter were dropouts, but 16 percent had some postsecondary education.

The data in Table 1 indicate that the vast majority of the enrollees were economically disadvantaged. Ninety-three percent met the criteria in the statute for being classified as economically disadvantaged. Forty-one percent received some form of public assistance, and 23 percent received Aid to Families with Dependent Children (AFDC). Over half, 54 percent, did not work in the 26 weeks prior to applying for JTPA.

The statute describes 28 different activities that are authorized under Title II-A, but the activities are usually summarized in five broad categories: classroom training, on-the-job training, job search assistance, work experience, and other services.

The data in Table 3 show the distribution of participants among activities in PY 1987 for all enrollees, youth, public assistance recipients, and dropouts. Classroom training (CT) is the most common activity, given to 36 percent of the participants. Twenty-two percent of the participants were initially assigned to on-the-job training (OJT), 19 percent received job search assistance (JSA), 7 percent received work experience (WE), and 16 percent received other services.[4] There are some differences in enrollment patterns for participants with different backgrounds. For example, youth, public assistance recipients, and dropouts tend to be enrolled in on-the-job training less often than others.

TABLE 3

TITLE II-A INITIAL PROGRAM ASSIGNMENT DISTRIBUTIONS FOR PARTICIPANTS NEWLY ENROLLED IN JTPA DURING PY 1987

(JULY 1987 - JUNE 1988)

Initial Program Assignment	All Participants	Youth	Public Assistance	School Dropouts
Classroom training	36	34	43	44
On-the-job training	22	15	18	20
Job search assistance	19	16	18	19
Work experience	7	13	6	4
Other Services	16	23	16	14
Total	100	100[1]	100[1]	100[1]

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[1] Numerical and/or percentage distributions may not add precisely to totals due to rounding.

Source: U.S. Department of Labor, Division of Performance Management and Evaluation, Office of Strategic Planning and Policy Development. Summary of JTQS Data for JTPA Title IIA and III Enrollments and Terminations During PY 1987 (December 1988).

JTPA Title II-A programs are based on a partnership of federal, state, and local government and the private sector. The federal funds are first allocated by a formula based on unemployment and the number of economically disadvantaged individuals to the states. The states then allocate 78 percent of the funds, using the same formula, to local units of government referred to as "service delivery areas" (SDAs), which are responsible for administering the program. The remaining funds are used for state education and coordination grants (8 percent), training programs for older workers (3 percent), administration (5 percent), and for incentive grants and technical assistance (6 percent).

Two aspects of the Title II structure play a major role in focusing the system on the needs of the private sector, helping to assure that training is structured to meet employer needs: private industry councils and performance standards. Because the JTPA Title II-A system appears to have stronger requirements in these areas than other government training programs, we describe them below.

Private Industry Councils

Each SDA designated by the governor is required by the Act to establish a private industry council (PIC). The members of the PIC are appointed by the chief elected official(s) of the SDA, and at least 51 percent of the members must be representatives of the private sector selected from nominations made by a general purpose business organization (e.g., the local chamber of commerce). The remaining PIC members may be representatives of organized labor, education agencies, the employment service, community based organizations, economic development agencies, and other interested parties. The chief elected official(s) of the SDA initially determines the size of the PIC, and PIC members thereafter determine the size.

The PICs are given substantial responsibility under Section 103 of JTPA. They are responsible for policy guidance and oversight of the program, and they must approve the SDA's job training plan. The job training plan provides detailed plans for administering the JTPA program, procedures for identifying and selecting participants, performance goals for the program, and procedures for selecting service providers. PICs also have the option to prepare the plan and/or administer the JTPA program if they wish, although fewer than 20 percent do so.

In a review of the literature on PICs, The National Commission for Employment Policy (1987) notes that various studies have reached conflicting conclusions on the importance of the PIC role. However, the commission concludes, "the preponderance of evidence seems to indicate that their role has been on the whole very positive and, in most cases, does not seem to be lessening over the passage of time." (p. 44.)

Performance Standards

Another feature of JTPA that encourages SDAs to integrate the needs of the private sector and JTPA activities, is the performance standards system. The Secretary of Labor is required, by Section 106 of the Act, to issue performance standards that indicate acceptable levels of performance. The Secretary has also issued optional regression models that can be used to modify the expected level of performance based on the characteristics of the participants served and local economic conditions. Governors may modify the standards or adjustment procedures, and they may add additional standards of their own. SDAs that exceed standards can receive incentive funds from the six-percent set-aside funds, and SDAs that fail to meet standards two years in a row can be reorganized by the governor.

The Title II-A performance standards issued by the Secretary include program outcomes such as the entered employment rate and the wage at placement. Recently, the Secretary added standards on postprogram performance dealing with earnings and employment in the 13 weeks following termination from JTPA. The performance standards for youth include attainment of employment "competencies" specified by the PIC. This provision clearly encourages integration of private sector needs with the operation of the training programs.

Because the performance standards provide rewards and sanctions for SDAs with very good or very poor performance, they would be expected to encourage SDAs to target their activities to the needs of the private sector. However, a recent study by SRI International (1988) concluded that other factors (e.g., the availability of local providers and economic conditions) were as important as performance standards in influencing the service mix.

2.2 Summer Youth Employment and Training Program

Title II-B of JTPA authorizes the Summer Youth Employment and Training Program. This program, which serves economically disadvantaged youth between the ages of 16 and 21, is designed to assist youth in obtaining part-time, minimum wage work during the summer, and it often provides them with their first working experience.[5]

The law states that funds for Title II-B programs can be used for (1) basic and remedial education, institutional and on-the-job training, work experience programs, employment counseling, occupational training, preparation for work, outreach and enrollment activities, employability assessment, job referral and placement, job search and job club activities, and any other employment or job training activity designed to give employment to eligible individuals or prepare them for, and place them in, employment; and (2) supportive services necessary to enable such individuals to participate in the program.

For FY 1988, $802 million were appropriated for summer youth programs (see Table 4).[6] The largest component of expenditures, 45 percent, was for support services (including stipends), followed by training services, which accounted for another 41 percent. The 1986 JTPA amendments require SDAs to assess all participants for reading and mathematical skills and to provide remediation. The Department of Labor has not issued regulations defining training for the Title II-B program, so some of the funds reported as training costs may represent expenditures on activities not usually considered training. Data on the costs and number of participants by type of training are not available.

The socioeconomic characteristics of youth participating in the summer programs during FY 1988 are also shown in Table 4. The number of males and females in the program is roughly equal, and the largest number of youth is in the 16 to 17 year-old age group. Over 85 percent of the participants are students, while another 10 percent have either

TABLE 4

TITLE II-B SUMMER YOUTH PROGRAMS
FISCAL YEAR 1988

Performance and Cost Indicators

	Number	Percent
Participants Served	689,862	
Total Cost Availability	802,119,259	
Total Accrued Costs	698,648,427	
Training Services	287,348,915	41%
Support Services	317,614,886	45
Administrative Services	93,684,625	13
Cost Per Participant	1,092	
Characteristics of Youth Served		
SEX		
Male	324,772	51
Female	315,090	49
AGE		
14 - 15	242,386	38
16 - 17	261,753	41
18 - 21	135,723	21
EDUCATION		
School Dropout	28,000	4
Student	548,922	86
High School Graduate or Equivalent or Above	62,940	10
RACE/ETHNICITY		
White	198,425	31
Black	262,309	41
Hispanic	150,682	24
Alaskan/American Indian	8.884	1
Asian/Pacific Island	19,562	3
Single HOH With Dependent Under 18	15,758	2
Limited English	72,073	11
Handicapped	81,863	13

Data exclude U.S. Virgin Island and the Pacific insular areas.

Source: Unpublished data, Employment and Training Administration, U.S. Department of Labor.

graduated from or continued past high school. Forty-one percent of all participants are black, another 31 percent are white, and 24 percent are of Hispanic origin. In total, almost 70 percent of youth participating in the summer employment and training programs are minority group members.

2.3 Employment and Training Assistance for Dislocated Workers

Title III of JTPA authorizes state programs to provide assistance to dislocated workers. The Title III program is a state program that serves dislocated workers through job search assistance, classroom training, on-the-job training, relocation assistance, pre-layoff assistance, relocation, and other means. The eligibility requirements for Title III are not as specific as the requirements for Title II programs, and states have considerable flexibility in determining which dislocated workers they choose to serve.[7]

Three-quarters of the Title III funds are distributed to states by a formula based on unemployment and long-term unemployment. The remaining funds are available to the Secretary of Labor for discretionary projects. Unlike the other JTPA programs, states are required to match the federal funds, with the extent of the match determined by the state's unemployment rate relative to the national rate. States may operate their Title III programs through the SDAs, but they are not required to do so.

Congressional interest in dislocated workers remained strong after the passage of JTPA. Among other things, the Congress was concerned whether the original Title III program provided the best distribution of funds across and within states, whether dislocated workers received appropriate services, whether workers whose job losses resulted from mass layoffs and plant closings were receiving enough service, and whether the services received by such workers were timely. To deal with these concerns, two major laws were enacted in the summer of 1988. The Worker Adjustment and Retraining Notification Act (WARN), enacted in July 1988, requires employers in certain circumstances to provide 60 days advance notice to workers and the state dislocated worker unit in the event of a mass layoff or plant closing. In August 1988, Subpart D of the Omnibus Trade and Competitiveness Act included the Economic Dislocation and Worker Adjustment Assistance Act (EDWAA), which modified the JTPA Title III program substantially.

EDWAA changed a number of features in the Title III program. Our assessment of the legislation is that the most significant changes are: (1) the mandate for the establishment and use of state rapid response units; (2) the mandate that states pass on at least 60 percent of the funds to substate areas; and (3) the requirement that at least 50 percent of the sub-state area funds be spent on training rather than job search assistance and related activities. Other provisions of EDWAA may have significant impacts, but these three areas represent significant deviations from the current program. Because of these changes, which will become effective on July 1, 1989, the information provided below on the characteristics and activities in Title III may not reflect how the Title III program will operate later this year.

Expenditures for Title III programs in PY 1987 were approximately $172 million. An estimated 98,200 displaced workers entered Title III programs during PY 1987, and 183,000 participants were served during the year. The average length of stay in the program was 16.3 weeks.

Table 5 and Table 6 provide characteristics of the Title III enrollees and terminees during PY 1987. The characteristics of Title III participants differ considerably from those of Title II-A participants. A majority of Title III participants in PY 1987 were males (about 60 percent), and most Title III participants, 84 percent, had at least a high school education. As would be expected, the Title III participants were older than Title II-A participants. Under 5 percent of the participants were under age 22, 70 percent were between 22 and 44, and 27 percent were age 45 and older. Approximately one-quarter of the enrollees were members of minority groups, and 30 percent of the enrollees were economically disadvantaged. Only six percent of the enrollees received public assistance, but over half (52 percent) were receiving unemployment compensation at application.

The activity mix for Title III is heavily concentrated in job search assistance and classroom training, as is shown in Table 7. Forty-four percent of the participants in PY 1987 were enrolled in job search assistance, and 28 percent were enrolled in classroom training. The remaining participants were evenly split between on-the-job training and other activities, with 14 percent in each. As noted above, when the EDWAA provisions become effective, the proportion of enrollees receiving training is likely to increase significantly.

TABLE 5

DISTRIBUTION OF TITLE III ENROLLEES IN EACH INITIAL PROGRAM ASSIGNMENT BY SELECTED CHARACTERISTICS: PARTICIPANTS NEWLY ENROLLED IN JTPA DURING PY 1987 (JULY 1987 - JUNE 1988)

	Initial Program Assignment				
Selected Characteristics	Total	CT[1]	OJT	JSA	Other Services
Total Enrollees	98,200	27,700	13,900	42,400	14,100
Sex					
Male	59	54	70	60	56
Female	41	46	30	40	44
Minority Status					
White (excluding Hispanic)	76	78	79	77	71
Black (excluding Hispanic)	17	16	15	16	21
Hispanic	5	4	4	5	7
Other	2	3	1	2	1
Age at Enrollment					
Younger than 19	-	1	1	-	-
19-21	3	3	5	3	3
22-29	22	23	29	20	18
30-34	48	49	43	49	46
45-54	19	18	17	19	24
55 and older	8	7	5	9	9
Economically Disadvantaged	30	30	32	30	30
Unemployment Compensation Claimant at Application	52	48	38	60	47
Participants Not Working During the 26 Weeks Prior to Application	22	22	24	23	19
Handicapped	3	4	3	3	3
Veteran at Application	21	18	22	22	20
Receiving Public Assistance at Application					
AFDC	1	2	1	1	1
Cash Public Assistance (AFDC, General, Refugee, SSI)	2	3	3	1	2
Food Stamps	4	3	5	5	6
Any public assistance (cash and/or noncash)	6	6	6	6	7
Adult Welfare[2]	2	3	2	1	1
Other Adult Assistance	4	3	4	5	6
Youth (age <22)	-	-	-	-	-
Average Monthly Amount (all types of assistance)	$269	$314	$228	$227	$255
Education Status					
School dropout	16	13	22	14	21
Student (HS or Less)	1	1	1	1	1
High School Graduate or Equivalent (no post HS)	52	53	55	49	54
Post High School	32	33	22	36	24

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[1] Program assignments include classroom training (CT), on-the-job traininig (OJT), job search assistance (JSA), and work experience (WE).

[2] Receiving AFDC, General Assistance and/or Refugee Assistance and at least 22 years of age at enrollment.

Source: U.S. Department of Labor, Division of Performance Management and Evaluation, Office of Strategic Planning and Policy Development. Summary of JTQS Data for JTPA Title IIA and III Enrollments and Terminations During PY 1987 (December 1988).

TABLE 6

DISTRIBUTION OF PY 1987 TITLE III TERMINEES BY SELECTED CHARACTERISTICS

Total Number of Terminees	126,582
Male	62%
Female	38
Age 16 - 21	4
Age 22 - 54	88
Age 55 and Over	8
White	73
Black	17
Hispanic	9
Alaskan/American Indian	1
Asian/Pacific Islander	2
Limited English	3
Unemployment Insurance Claimant	52
Unemployed 15 or More Weeks of Prior 26	42

Source: Unpublished Department of Labor data based on JTPA Annual Status Reports (JASR).

TABLE 7

TITLE III INITIAL PROGRAM ASSIGNMENT FOR PY 1987

	Percent
Job Search Assistance	44
Classroom Training	28
On-the-job-Training	14
Other	14

Source: U.S. Department of Labor, Division of Performance Management and Evaluation, Office of Strategic Planning and Policy Development. Summary of JTQS Data for JTPA Title IIA and III Enrollments and Terminations During PY 1987 (December 1988).

2.4 Native American Program

The Native American Program provides employment and training services to members of Indian, native Alaskan, and native Hawaiian communities to address the particular unemployment and economic disadvantages these groups face. Like other JTPA Title IV programs, the Native American program is administered at the national level by the Office of Job Training Programs in the Employment and Training Administration. Funds for the program are distributed to Indian tribes, bands, or groups representing the interests of Native Americans. Indian grantees are given a great deal of autonomy in planning and operating programs suited to local conditions and individual group needs. They also help in formulating program regulations and performance standards. In addition to providing these grants, the Employment and Training Administration is responsible for making employment and training services available to nonreservation Native Americans.

By law, the Native American program is allocated 3.3 percent of the amount allocated to JTPA Title II-A programs. For PY 1987, $59.7 million was allocated to 188 grantees; this level of funding supported an average enrollment level of 7,400 at a cost of $8,127 per service year.[8] Training and employment costs amounted to $27 million and $18 million, respectively (see Table 8). Almost half of total training costs were devoted to training assistance ($13.4 million), 36 percent to classroom training ($9.8 million), and 14 percent to on-the-job training ($3.9 million).[9] Table 9 indicates the number of participants receiving various services with these funds. Of the 33,000 individuals participating in the program in PY 1987, 9,500 received classroom

TABLE 8

NATIVE AMERICAN PROGRAM
COST INDICATORS
PROGRAM YEAR 1987

	Expenditures
Training Costs	27,101,967
Classroom Training	9.753,423
On-the-Job Training	3,885,734
Tryout Employment	61,034
Training Assistance	13,401,776
Employment Costs	18,583,428
Work Experience	12,087,570
Community Service Employment	6,495,858
Other Costs	2,750,831
General Activities (non E/T)	524,153
Supportive Services (non E/T)	2,226,678
Administration	12,385,304
Total	60,821,530
Community Benefit Projects	435,126

Note: National percentages are calculated on values accumulated from grants where all appropriate reports are present and error free.

Source: Unpublished data, Employment and Training Administration, U.S. Department of Labor.

TABLE 9

NATIVE AMERICAN PROGRAM
PERFORMANCE INDICATORS
PROGRAM YEAR 1987

	Number	Percent
Participation and Termination Summary		
Total Participants	32,904	100.0
Classroom Training[1]	9,501	28.9
On-the-Job Training	3,181	9.7
Tryout Employment	76	0.2
Work Experience	7,287	22.2
Community Service Employment	2,063	6.3
Total Terminations	27,191	82.6
Entered Unsubsidized Employment	14,203	43.2
Direct	7,195	21.9
Indirect from Classroom	2,762	8.4
Indirect from O-J-T	2,037	6.2
Indirect from Tryout Employment	40	0.1
Indirect from Work Experience	1,553	4.7
Indirect from Community Service Employment	616	1.9
Additional Positive Terminations	8,916	27.1
Entered Non-Section 401 Training	533	1.6
Returned to Full-Time School	1,496	4.6
Completed Major Level of Education	1,236	3.8
Other Successful Completion of Activity	5,651	17.2
Other Terminations	4,072	12.4
Total Current Participants	5,713	17.4
Characteristics of Terminees		
Sex		
Male	13,894	50.8
Female	13,297	49.2
Age		
14-15	565	2.0
16-21	7,025	25.7
22-24	17,487	64.2
45 and Over	2,114	8.1
Education		
School Dropout: 8th Grade or Less	1,349	5.3
School Dropout: 9th-12th Grade	5,548	20.5
Student, High School or Less	2,145	7.8
High School Grad. or Equivalent, or Above	18,149	66.4
Family		
Single Head of Household w/ Dep. Children	5,119	n/a
Other		
Limited English Language. Proficiency	1,345	n/a
Handicapped	646	
Offender	2,138	
Welfare Recipient	6,125	
Transiency	1,710	
Labor Force Status at Entry		
Unemployed: Long-Term	10,314	n/a
Not in Labor Force	6,742	
Average Weeks Participated	16	
Earnings and Wage Data		
Average Earnings (52 Weeks Preprogram)	4,225	
Average Hourly Wage at Termination	5.19	

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[1] Training categories do not sum to total since some participants do not receive formal training and others receive more than one type of training.

Source: Unpublished data, Employment and Training Administration, U.S. Department of Labor.

training, 3,200 received on-the-job training, 7,300 obtained work experience, and 2,000 individuals participated in community service employment.

Characteristics of program participants are shown in Table 9 for terminees in PY 1987. Half of the participants were male and half were female. Over 60 percent were between the ages of 22 and 44, and the majority had graduated from high school. More than 10,000 terminees were unemployed, and close to 7,000 were not in the labor force. The average length of stay in the program was 16 weeks.

2.5 Migrant and Seasonal Farmworker Program

Another JTPA Title IV program is designed to assist agricultural workers who are affected by chronic seasonal unemployment and underemployment, and by the displacement effects of new technology and mechanization. The federally administered Migrant and Seasonal Farmworker (MSFW) Program helps migrant and seasonal farmworkers find unsubsidized agricultural and nonagricultural employment. The program is operated by nonprofit organizations and state and local government agencies which are selected on a competitive basis every two years. Participants are provided with a variety of employment and training services, including classroom and on-the-job training, work experience, and tryout employment. They are also given job referrals and placement, relocation and housing assistance, transportation, health and medical care, various types of emergency assistance, and other support services.

Program year 1987 was the first year of the two-year competitive funding cycle. The budget allocation was \$59.6 million.[10] By law, a minimum of 94 percent of annual program appropriation must be given to states (except Alaska, Rhode Island, and the District of Columbia) and Puerto Rico; states received a total of $57.3 million in PY 1987 on a formula basis. The remaining $2.3 million was retained in a discretionary national account to support a migrant housing program, various types of technical assistance, and other national activities. With the state funds, and those left over from the previous program year, 46,800 individuals were served. Sixty-eight grants were given to private non-profit organizations, and eight were awarded to public agencies.

For PY 1988, Congress has added an additional $5.9 million to the basic appropriation of $59.6 million for the program. Additional funds were provided in order to serve the growing number of eligible migrant and seasonal farmworkers resulting from the Immigration Reform and Control Act of 1986. Estimates indicate that this legislation has added 650,000 individuals to the eligible MSFW population. Half of the $5.9 million increase was allocated to the states using regular Census estimates of the farmworker population; the other half was allocated to states based on new estimates of the recently legalized group provided by the Immigration and Naturalization Service.

Data on terminees indicate that over 6,000 participants received classroom training, 7,000 received on-the-job training, and another 4,500 received tryout employment, training assistance, and work experience (see Table 10). Classroom training comprised 34 percent of program costs ($18.8 million). On-the-job training accounted for

TABLE 10

MIGRANT AND SEASONAL FARMWORKER PROGRAM
PERFORMANCE AND COST INDICATORS
PROGRAM YEAR 1987

	Total	Percent
Performance Indicators		
Participants	46,834	
Terminations	37,856	100%
Training Received by Terminees		
Classroom Training	6,536	17
On-the-Job Training	7,076	19
Tryout Employment	281	1
Training Assistance	2,987	8
Work Experience	1,307	3
Services Only	19,669	52
Total Current Participants	8,978	
Cost Indicators		
Total	$56,050,776	
Classroom Training	18,805,948	34
On-the-Job Training	12,844,760	23
Tryout Employment	506,534	1
Training Assistance	5,497,459	10
Total Working Experience	4,548,080	8
Services Only	2,881,777	5
Administration	10,966,218	20

Source: Unpublished data, Employment and Training Administration, U.S. Department of Labor.

another 23 percent of total costs ($12.8 million). Three quarters of program costs were devoted to some form of training activity.

Table 11 shows various socioeconomic characteristics of program participants in PY 1987. Almost half of the 38,000 terminees in PY 1987 were migrant farmworkers, and slightly over half were seasonal farmworkers. The majority, 24,000, were male, and most participants were between the ages of 22 and 44. The largest race/ethnic group was Hispanics, totaling almost 23,000. This was followed by blacks (7,000) and then whites (6,500).

2.6 Job Corps

Job Corps is a federally administered training and employment program for economically disadvantaged youth between the ages of 16 and 21. Originally established in 1964 under the Economic Opportunity Act, Job Corps is currently authorized under Title IV-B of JTPA. The purpose of the program, as stated in the Act, is "to assist young individuals who need and can benefit from an unusually intensive program, operated in a group setting, to become more responsible, employable and productive citizens; and to do so in a way that contributes, where feasible, to the development of national, state and community resources, and to the development and dissemination of techniques for working with the disadvantaged that can be widely utilized by public and private institutions and agencies" (Sec. 421).

Job Corps services are typically administered in a residential setting, although nonresidential services are also authorized. Job Corps centers provide youth with a wide variety of services, including

TABLE 11

MIGRANT AND SEASONAL FARMWORKER PROGRAM
CHARACTERISTICS OF TERMINEES
PROGRAM YEAR 1987

Characteristics of Terminees

	Total	Percent
Total	37,856	
Migrant	18,229	48%
Seasonal	19,627	52
SEX		
Male	24,262	64
Female	13,594	36
AGE		
14-15	169	0.4
16-21	7,812	21
22-44	24,024	63
45 and Over	5,851	15
EDUCATION		
School Dropout 8th or Less	13,717	36
School Dropout 9th-12th	11,213	30
Student High School or Less	737	2
High School Grade or Above	12,189	32
RACE/ETHNICITY		
White	6,568	17
Black	7,037	19
Hispanic	22,889	60
American Indian or Alaskan Native	953	3
Asian or Pacific Islander	409	1
Limited English Proficiency	11,833	31
Handicapped	546	1
Welfare Recipient	4,496	12
Single Head of Household	4,789	13
Unemployed at Entry	30,520	81
Average Weeks Participated	12	
Average Earnings (52 Weeks Preprogram)	$3,214	
Average Hourly Wage at Termination	$ 4.67	

Source: Unpublished data, Employment and Training Administration, U.S. Department of Labor.

basic education, vocational skills training, and work experience, in addition to support services such as subsistence, clothing, health care, and recreation. The centers are administered by government, labor, and private sector organizations. In PY 1987, 106 Job Corps centers were in operation, 76 of which were managed and operated by major corporations and nonprofit organizations under contract with the Department of Labor.[11] Another 30 centers were run by the Departments of Agriculture and Interior.[12] Labor unions and trade associations also provide training in Job Corps centers.

Between 1977 and 1981, Jobs Corps' capacity was doubled. Since 1982, annual appropriations have averaged around $600 million, a level of funding sufficient to support approximately 40,500 service years. Since the average length of stay in the program is less than one year, roughly 100,000 individual youths are served each year. For PY 1987, Job Corps was appropriated $656 million (see Table 12). Over 38,000 service years were provided, and 103,000 individuals were served. Program costs averaged $16,000 per service year and $10,000 per participant. Table 12 also shows program costs by type of service category. Over 71 percent of the annual cost of Job Corps was spent on center operations, which includes training and educational costs. Within the category of center operation costs, over 72 percent was for residential living and various administrative costs. Vocational training was the third largest cost component, comprising 15 percent of total center operation costs. During PY 1987, Job Corps spent $73 million on vocational training and $34 million on basic education.

TABLE 12

JOB CORPS
PERFORMANCE AND COST INDICATORS
PROGRAM YEAR 1987

Performance Indicators

Number of Job Corps Centers	106
Corpsmember Service Years (CMSY)	38,684
New Enrollees Served	65,150
Total Participants	103,806
Total Terminations	66,233
Average Length of Stay (months)	7.0

	For Terminees Reported		Estimate For All Terminees	
Placement Outcomes for Terminees	**Number**	**Percent**	**Number**	**Percent**[1]
Employment	36,083	67.9%	40,750	61.5%
Further Education	8,565	16.1	9,673	14.6
Total Positive Outcomes	44,648	84.0	50,423	76.1

Cost Indicators

Appropriation ($ -000-) $656,350[2]

Job Corps by Category	Amount ($-000-)	As Percent Of Total
Enrollee Transportation	9,174	1.4%
Enrollee Allowances	69,436	10.2
Outreach, Screening, Placement	31,171	4.6
Center Operations	487,125	71.8
National Management Systems	529	0.1
National Administrative Costs	3,594	0.5
Capital Equipment	8,188	1.2
Vehicle Amortization	3,719	0.6
VST Materials	10,947	1.6
Arch/Engr and Property Mgmt Support	8,888	1.3
Center Facility Leases	4,214	0.6
Construction/Rehab/Facility Acquisition	41,614	6.1
TOTAL	678,599[2]	100.0%

Break-Out of Center Operations Costs

Residential Living	159,777	32.8%
Basic Education	34,586	7.1
Vocational Training	73,069	15.0
Medical and Dental	26,305	5.4
Administrative/Management/Other	193,388	39.7
TOTAL	487,125	100.0%

Unit Costs (Reflects all costs except construction/rehab/facility acquisition).

Cost Per Corpsmember Service Year	16,466
Cost Per New Enrollee	9,777
Cost Per Placement	12,633

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[1] Most Job Corps enrollees receive their training away from their communities, which makes it difficult for placement agencies to locate and report on many of them. The estimation procedure assumes, conservatively, that terminees not located are placed only through self-placement of rates equal to those who are located.

[2] Costs can differ from appropriations due to time differences between obligations and expenditures.

Source: Job Corps In Brief: Program Year 1987, U.S. Department of Labor, Employment and Training Administration.

These figures correspond to 11 and 5 percent of total annual costs, respectively.

Corpsmembers spend half of their time receiving vocational training and the remainder in basic education classes. Vocational skills training consists of a number of activities including instruction, demonstration and practice, shop-type classes, and "hands-on experience." Vocational curricula are competency-based and typically fall into the following types of occupational categories: business and clerical skills, word processing, culinary arts, health occupations, automotive trades, construction trades, welding, and building and apartment maintenance.

The principal target group for Job Corps is severely disadvantaged youth. The socioeconomic characteristics of Job Corps enrollees in PY 1987 are shown in Table 13. The data are consistent with one federal publication's description of a typical program participant: "an 18-year-old high school dropout who reads at the elementary school level, comes from a poor family, is a minority group member, has never held a regular job, and was living in an environment characterized by cultural deprivation, a disruptive home life, or other disorienting conditions impairing his (her) ability to successfully participate in other programs providing training, education or assistance."[13] As Table 13 indicates, over two-thirds of corpsmembers are male, and over two-thirds come from a minority group. While the average age is 18, over 85 percent cannot read above the eighth-grade level upon entering the program. Other economic indicators, such as the proportion who have

TABLE 13

JOB CORPS
CHARACTERISTICS OF YOUTH SERVED
PROGRAM YEAR 1987

	Percent
SEX	
Male	68.3%
Female	31.7
AGE AT ENTRY: average 18	
16 and under	21.5
17	21.9
18	19.5
19	16.3
20	11.6
21+	9.2
RACE-ETHNIC GROUP:	69.9 Minority
Black	54.8
White	30.1
Hispanic	10.2
American Indian	3.3
Asian-Pacific	1.6
ENTRY READING LEVEL:	**average grade 6**
Under Grade 3	6.3
Grade 3-4	23.8
Grade 5-6	29.9
Grade 7-8	25.9
Above Grade 8	14.1
HIGH SCHOOL DROPOUT:	81.5
NEVER EMPLOYED FULL TIME:	75.9
FAMILY SIZE	
1	26.3
2-4	41.1
5 and over	32.6
FAMILIES ON PUBLIC ASSISTANCE:	38.6
ANNUAL FAMILY INCOME (excluding families receiving Public Assistance)	
Under $5,000	33.1
$5,000 - $7,000	7.5
$7,000 - $9,000	7.9
Over $9,000	20.7
Average Annual Family Income	**$6,138**

Source: Job Corps In Brief: Program Year 1987, U.S. Department of Labor, Employment and Training Administration.

dropped out of high school and the level of family income, are consistent with the disadvantaged backgrounds of most corpsmembers.

2.7 Veterans Employment and Training Program

Programs for the employment and training of American veterans are authorized under Title IV-C of JTPA and supplement major veterans' programs overseen by the Veterans' Administration. Veterans' Employment and Training Service (VETS) programs serve veterans with a service-connected disability, Vietnam-era veterans, and veterans recently separated from the military. For PY 1987, $10.6 million were appropriated for Veterans' Employment and Training under JTPA. As required by regulation, 80 percent of this was granted directly to states for regular program activities; these grantees are required to match federal funding with cash or in-kind assistance. The remaining 20 percent was retained at the national level for discretionary purposes -- research and development activities, demonstration projects, and technical assistance programs that are national in scope. In PY 1987, for example, some of these funds were used for pilot projects aimed at getting homeless veterans into the workforce, and in PY 1988 for programs on post-traumatic stress disorder and programs for female veterans.

Very little data are available on the number of participants receiving different types of training through these programs. In PY 1987, almost 15,000 veterans were served through Title IV-C programs, and most of them received training.[14] The majority of veterans received some form of job search assistance, followed by on-the-job training, and classroom training.

3. Vocational Education

Vocational education programs provide students at the secondary and postsecondary levels with training that will enable them to pursue employment in a broad range of occupations. Federal support for vocational education is authorized under the Perkins Act, which defines vocational education as follows:

> Vocational education means organized educational programs which are directly related to the preparation of individuals for paid or unpaid employment, in such fields as agriculture, business occupations, home economics, health occupations, marketing and distributive occupations, technical and emerging occupations, modern industrial and agricultural arts, and trades and industrial occupations, or for additional preparation for a career in those fields, and in other occupations requiring other than a baccalaureate or advanced degree.

Federal support for vocational education currently is approximately $888 million annually, with most of the funding distributed to states by formula. States supplement the federal funding for vocational education, but the Second Interim Report of the National Assessment of Vocational Education (NAVE) notes that "Little is known about the extent and nature of state authority in financing and regulatory matters beyond the criteria states establish for vocational teacher certification" (p. 2-21).[15]

The Perkins Act specifies that 57 percent of the funds are to be used for six specific target groups, and the remaining 43 percent of the funds may be used for program improvement.[16] The target groups and the mandated shares of the funds are:

Handicapped	10%
Disadvantaged students	22%
Adults in need of training	12%
Single parents or homemakers	8.5%
Programs to eliminate sex bias and stereotyping	3.5%
Criminal offenders in institutions	1%

Current law provides states with almost total flexibility in allocating funds between the secondary and postsecondary levels, and states are not required to report how they distribute funds between the secondary and postsecondary levels. NAVE sponsored a survey of the states to determine state policies; the Second Interim Report concludes that 40 percent of the Perkins Act funds are used for postsecondary vocational education, and 60 percent of the funds are used for secondary vocational education. The report indicates that there is significant variation among states, with one state spending under 10 percent of its funds at the postsecondary level, and two states spending over 90 percent of the funds at the postsecondary level.

Analysis of transcripts of a random sample of seniors from the class of 1982 by NAVE staff indicates that 97 percent of secondary school students take at least one vocational course, and that vocational enrollments account for 20 percent of the total courses taken by high school students.[17] As noted in Section 1, the focus of this study is on training that takes place outside the regular education system. We therefore do not present detailed information on secondary vocational education; the interested reader is referred to NAVE (1988a).

Data on the characteristics of vocational education students and the courses they take must be obtained from secondary sources collected for other purposes because there is currently no comprehensive reporting system on how vocational education funds are distributed below the state level.[18] Because the Department of Education contributes a relatively small share of the resources for vocational education, it has not been able to establish a comprehensive data system for vocational education students or finances.[19] One source used by NAVE is the High School and Beyond Survey (HS&B), which tracks students who were seniors in 1980; this information may be somewhat dated, and it does not cover older students enrolled in vocational education. Data from the 1987 National Postsecondary Student Aid Survey (NPSAS) is more recent, but without conducting analyses beyond the scope of this project, we cannot isolate vocational students from others enrolled in public two-year or four-year colleges.

Based on analysis of HS&B, NAVE (1988b, p. 1-6) estimates that 61.7 percent of the class of 1980 enrolled in postsecondary education within four years of high school graduation. Using a taxonomy developed by NAVE staff, the NAVE report concludes that 37.9 percent of those who continued their education enrolled in vocational programs. The NAVE report concludes that 34.7 percent of all postsecondary credits obtained are in vocational fields. At public two-year colleges 34.7 percent of the credits are vocational, and at four-year colleges 31.9 percent of the credits are vocational, as defined by NAVE.

The NAVE taxonomy defines vocational education considerably more broadly than the definition of training provided in Section 1 of this report, and many of the students classified by NAVE as receiving postsecondary vocational education (particularly at four-year institutions) are probably not having their courses supported by federal vocational education funds. Specifically, NAVE's definition of vocational education is based on subject matter, while our interest is in assessing training that is not part of a baccalaureate program. Thus, the NAVE definition of vocational education includes all courses in fields such as engineering, computer science, education, business, and agriculture, even if the courses are part of a degree program. The NAVE definition is likely to significantly overstate training, as we use the term, especially at the postsecondary level in four-year institutions.

Because there are no satisfactory published data on the number of students enrolled in public postsecondary vocational education as we have defined the term, the best we can do to estimate the enrollment level is to make rather crude estimates. As an upper bound, we could assume that all students enrolled in public two-year colleges are vocational students. The 1988 Digest of Education Statistics places this figure at 4.42 million students. Some of these students are enrolled in academic degree programs, but we have been unable to find published data that indicate the proportion of these students that are enrolled in vocational programs.[20]

Estimates of the characteristics of students enrolling in postsecondary vocational education based on NAVE analysis of HS&B are provided in Table 14. Note that the column on the right of the table includes students in private colleges as well as students enrolled in public vocational education programs. In the public two-year colleges, women comprise a slight majority of the students, 53.3 percent. Most of the students are white, 82.5 percent, while 9.4 percent are black, and

TABLE 14

DISTRIBUTION OF STUDENTS ENTERING POSTSECONDARY VOCATIONAL EDUCATION HIGH SCHOOL CLASS OF 1980

	High School Graduates	Vocational Students Public Two-Year Colleges	Students In Technical Institutes	Students In Private Vocational Schools	All Postsecondary Vocational Students
Men	49.3%	46.7%	52.5%	27.3%	45.3%
Women	50.7	53.3	47.5	72.7	54.7
White	80.8	80.9	82.5	80.0	81.1
Black	11.4	9.4	10.6	13.1	10.1
Hispanic	5.4	7.2	4.9	5.8	6.5
Other	2.3	2.5	2.0	1.1	2.3
Low SES	24.1	23.8	28.2	25.9	25.0
Middle SES	50.1	54.6	56.6	59.1	55.6
High SES	25.8	21.6	15.2	15.0	19.4
Low Ability	23.1	22.4	25.9	28.7	24.1
Middle Ability	50.4	59.5	62.5	57.0	59.5
High Ability	26.5	18.1	11.6	14.3	16.4
Academic Program	39.2	31.9	22.0	26.0	28.9
Vocational Program	24.7	29.7	41.2	45.9	34.1
General Program	36.1	38.4	36.8	28.1	36.9
Aspirations					
High School Only	18.7	8.8	12.2	14.2	9.8
Vocational Certificate	18.9	21.1	56.2	48.4	30.6
Associate Degree	15.2	33.1	18.9	6.4	29.5
Bachelor's Degree	25.6	23.0	9.4	17.8	19.1
Postgraduate Degree	21.5	13.9	3.3	13.2	11.1

Source: U.S. Department of Education, National Assessment of Vocational Education. Second Interim Report to Congress, (September 1988).

7.2 percent are Hispanic. Slightly over half the students are from middle socioeconomic status (SES) backgrounds, and about 60 percent are middle ability students.

Table 15 shows the distribution of postsecondary credits for the high school class of 1980. For students enrolled at four-year colleges or public two-year colleges, more than half the credits received were for academic courses rather than vocational courses, although it should be kept in mind that this table is not restricted to vocational students. The most common vocational fields, in the NAVE taxonomy, are business courses and technical and engineering courses.

Enrollment in postsecondary vocational education is frequently not a full-time activity, and it often does not lead to obtaining an occupational credential. The NPSAS data indicate that 63.8 percent of the students in public two-year colleges are enrolled on a part-time basis. NAVE analysis of HS&B data indicates that within four years of high school graduation, only one out of five students had received a credential -- 11.4 percent received vocational associate degrees, 5.7 percent received academic associate degrees, and 2 percent received certificates. Of the other students, 42 percent left school without a degree or certificate, 13.8 percent were still enrolled at the school, and 25.2 percent had transferred to another school.

4. Senior Community Service Employment Program

The Senior Community Service Employment Program (SCSEP), also known as the Older Workers program, is operated under the authority of Title V of the Older Americans Act. The program provides subsidized

TABLE 15

DISTRIBUTION OF POSTSECONDARY CREDITS BY FIELD HIGH SCHOOL CLASS OF 1980

	Public Two-Year Colleges	Public Technical Institutes	Private Vocational Schools	Four-Year Colleges	All Post-Secondary Institutions
Shares of all postsecondary credits	18.1%	6.1%	2.1%	74.1%	100.0%
Shares of all postsecondary vocational credits	30.2%	11.4%	7.5%	50.1%	100.0%
Shares of credits among curriculum areas					
Vocational	34.7%	70.4%	69.4%	31.9%	34.7%
Academic	58.3	24.9	28.1	64.6	61.1
Remedial/avocational	6.5	3.8	1.5	3.2	4.2
	100.0%	100.0%	100.0%	100.0%	100.0%
Distribution by fields					
Vocational fields	34.7	70.4	69.4	31.9	34.7
Business	12.0	18.4	24.5	9.6	10.7
Marketing	1.5	1.6	4.4	1.7	1.8
Health Care	3.6	7.7	14.0	1.8	2.6
Occupational home economics	2.4	2.7	4.9	1.9	2.0
Trades and industry	3.1	15.0	7.0	1.1	2.1
Technical and engineering	6.9	17.0	10.2	6.7	7.1
Education	1.0	.4	.1	3.8	3.0
Public Service	1.1	2.0	.0	1.5	1.4
Agriculture	1.1	2.8	.4	1.2	1.2
Communications	1.9	2.9	3.9	2.6	2.5
Academic fields	58.3	24.9	28.1	64.6	61.1
Letters	12.1	5.8	6.2	9.8	10.0
Foreign Languages	1.4	.0	.1	3.4	2.8
Humanities	6.1	.6	2.3	8.6	7.7
Sciences	10.5	4.1	4.6	11.4	10.7
Mathematics	9.1	7.4	4.4	7.6	7.8
Social Sciences	14.2	6.1	4.9	16.2	15.1
Fine Arts	4.7	.8	5.6	7.1	6.3
Liberal/general studies	.3	.1	.1	.5	0.4
Remedial/avocational	6.5	3.8	1.5	3.2	4.2
	100.0%	100.0%	100.0%	100.0%	100.0%

Source: U.S. Department of Education, National Assessment of Vocational Education. Second Interim Report to Congress, (September 1988).

part-time employment and training opportunities to individuals aged 55 and older and has a goal of placing at least 20 percent of participants in unsubsidized employment each year. SCSEP participants work an average of 20 hours per week in a variety of community service settings -- including day care centers, schools, and hospitals. Participants are generally paid the minimum wage for their work. Participants in SCSEP are also eligible for training, job-related counseling, and physical examinations.

SCSEP awards one-year grants to a number of national organizations (e.g., the National Council on the Aging and the American Association of Retired Persons) in addition to state and territorial governments. There are currently 61 grantees operating the SCSEP program. Amendments to the Older Americans Act in 1987 require that two new national organizations -- an Indian aging organization and a Pacific Island/Asian American aging organization -- be given SCSEP funds for PY 1988. Total funding for PY 1988 is set at $331.3 million, which will finance 64,807 service years. About 90,000 older workers will be served, and it is expected that 14,000 to 15,000 participants will be placed in permanent unsubsidized employment during PY 1988.

Table 16 presents summary data on program operations during for PY 1987. Enrollment during this year was 66,000 older workers, and 22 percent of this group was placed into unsubsidized employment. Over 63 percent of community service activities was for the general community, and the remainder was for services to the elderly community. Almost 70 percent of the elderly participating in the program were female, and almost 63 percent were white. Between 20 and 25 percent of participants

TABLE 16

SENIOR COMMUNITY SERVICE EMPLOYMENT PROGRAM
PROGRAM YEAR 1987

Enrollment Levels

		Percent
Established Enrollment	65,756	
Carried Over From Previous	62,695	
Newly Enrolled	37,765	
Enrollees Placed in Unsubsidized Employment	14,454	
Placement Rate		22.0%
Other Terminations	18,098	
Current Enrollment	67,908	

Expenditures to Date

Federal Funds Authorized	$355,999,996
Total Federal Share Outlays	326,105,348
Total Non-Federal Outlays	53,132,868
Administration	34,523,865
Wages & Benefits	273,602,051
Other Costs	17,979,432

Job Inventory

Services to General Community		
Education	9,743	14.3%
Health and Hospitals	3,252	4.8
Housing/Home Rehabilitation	1,057	1.6
Employment Assistance	1,451	2.1
Recreation, Parks & Forests	6,045	8.9
Environmental Quality	1,397	2.1
Public Works & Transportation	3,168	4.7
Social Services	9,837	14.5
Other	6,977	10.3
TOTAL	42,927	63.2
Services to Elderly Community		
Project Administration	1,693	2.5
Health and Home Care	2,879	4.2
Housing/Home Rehabilitation	1,098	1.6
Employment Assistance	899	1.3
Recreation/Senior Centers	5,434	8.0
Nutrition Programs	7,039	10.4
Transportation	1,546	2.3
Outreach/Referral	2,584	3.8
Other	1,809	2.7
TOTAL	24,981	36.8

Enrollee Characteristics

	Enrollment	Percent
SEX		
Male	21,006	30.9%
Female	46,902	69.1
EDUCATION		
8th & Under	18,863	27.8
9th-11th	14,466	21.3
High School	23,043	33.9
1 - 3 Years College	8,099	11.9
4 Years College	3,437	5.1
FAMILY INCOME:		
Poverty Level	54,582	80.4
Veteran	9,482	14.0
RACE/ETHNICITY		
White	42,596	62.7
Black	16,191	23.8
Hispanic	5,898	8.7
Indian/Alaskan	1,047	1.5
Asian/Pacific	2,176	3.2
AGE		
55-59	13,602	20.0
60-64	19,398	28.6
65-69	17,056	25.1
70-74	10,575	15.6
75 and Over	7,277	10.7

Source: Unpublished data, Employment and Training Administration, U.S. Department of Labor.

fell into each of the three age groups between 55 and 69, while the remaining 26 percent were aged 70 and older. No data on training services received by program participation are available.

5. Vocational Rehabilitation

The Vocational Rehabilitation program, authorized under Title I of the Rehabilitation Act of 1973, provides grants to states to provide comprehensive vocational rehabilitation programs that meet the "needs of individuals with handicaps so that such individuals may prepare for and engage in gainful employment to the extent of their capabilities." Disabled individuals must satisfy a number of requirements to be eligible to participate in the program. Participants must have a physical or mental disability which can be medically described, they must have a substantial handicap to employment, and they must be capable of achieving employability (i.e., they have rehabilitation potential).

All vocational rehabilitation activities are conducted at the state level, but are reviewed and monitored by the Rehabilitation Services Administration of the U.S. Department of Education. Currently, there are 86 state agencies administering vocational rehabilitation in the 50 states, the District of Columbia, the territories and other government units.[21] Twenty-seven states have 2 agencies, one for the blind and one for people with other disabilities. In the remaining states, a single agency is responsible for all vocational rehabilitation services. In FY 1988, total Federal funding available for state grants was approximately $1.2 billion. These funds are allocated on a formula basis (depending on state population, per capita income, etc.), and there is a state matching fund requirement (80 percent Federal and 20 percent state).

In FY 1988, approximately 918,900 individuals were served by state vocational rehabilitation agencies, and approximately 218,200 were successfully rehabilitated. Data on the characteristics of clients who were rehabilitated in FY 1985 (the most recent year for which these data are available) are shown in Table 17.[22] Almost half of all clients were between the ages of 25 and 44. Participants were more likely to be never-married, male, and white. In addition, the average participant was more likely to be severely disabled and to be a non-veteran. A significant majority, almost 85 percent, of rehabilitated clients had no earnings at referral to the program.

Although the majority of rehabilitated persons (54.1 percent) received some form of training during the course of their rehabilitation, vocational rehabilitation services are individualized to the needs of each client, and many individuals do not receive any form of training. Training is broadly defined in this program and includes education; program participants are classified as receiving training if they receive academic, business, vocational, or personal and vocational adjustment training from any source as arranged for by the state agency. Data on the total number of clients receiving training during the course of their rehabilitation and the types of training provided are shown in Table 18 for persons rehabilitated in FY 1985.[23] This group represented 64.2 percent of all active case closures in the same year. Approximately 24 percent of rehabilitated clients received personal and vocational adjustment training, 14 percent received vocational school

TABLE 17

VOCATIONAL REHABILITATION
CHARACTERISTICS OF PERSONS REHABILITATED
FISCAL YEAR 1985

	Total Rehabilitations	
	Number	Percent
TOTAL	**227,652**	
AGE AT REFERRAL		
Number reporting	218,052	100%
Under 18 Years	18,040	8.3
18-24 Years	59,085	27.1
25-44 Years	98,796	45.3
45-64	36,218	16.6
65 years and over	5,913	2.7
SEX		
Number reporting	218,915	100%
Male	123,684	56.5
Female	95,231	43.5
RACE		
Number reporting	218,366	100%
White	175,157	80.2
Black	39,404	18.0
American Indian/ Alaskan Natives	1,133	0.5
Asian and Pacific Islander	2,672	1.2
Hispanic Origin		
Number reporting	204,695	100%
Hispanic origin	13,869	6.8
Not of Hispanic origin	190,826	93.2
EDUCATION		
Number Reporting	206,347	100%
No grades completed	633	0.3
1-7 grades completed	11,213	5.4
8-11 grades completed	52,721	25.5
12 grades completed	78,162	37.9
13 grades and over completed	32,314	15.7
Special Education	31,304	15.2
MARITAL STATUS		
Number reporting	197,584	100%
Married	58,062	29.4
Widowed	7,457	3.8
Divorced	28,351	14.3
Separated	11,968	6.1
Never married	91,746	46.4
SEVERITY OF DISABILITY		
Number reporting	227,652	100%
Severely Disabled	135,229	59.4
Non-Severely Disabled	92,423	40.6
VETERAN STATUS		
Number reporting	217,872	100%
Veteran	9,182	4.2
Non-Veteran	208,690	95.8
Weekly Earnings at Referral		
Number reporting	212,174	100%
No earnings	178,423	84.1
Less than $100	12,239	5.8
$100-$199	13,409	6.3
$200 and over	8,103	3.8

Source: Annual Report of the Rehabilitation Services Administration on Federal Activities Related to the Administration of the Rehabilitation Act of 1973, as Amended: Fiscal Year 1987. Rehabilitation Services Administration, U.S. Department of Education.

TABLE 18

VOCATIONAL REHABILITATION TRAINING SERVICES AND COST INDICATORS REHABILITATED CASES: FISCAL YEAR 1985

	Total Closed During Year	
	Number	Percent
TOTAL REHABILITATIONS	227,652	--
TYPE OF SERVICE PROVIDED OR ARRANGED FOR BY AGENCY[1]		
Number Reporting	205,225	100.0%
Training	110,955	54.1
College or University	20,796	10.1
Other Academic (Elementary or High School)	7,111	3.5
Business School or College	4,455	2.2
Vocational School	27,778	13.5
On-The-Job Training	15,184	7.4
Personal and Vocational Adjustment	48,218	23.5
Miscellaneous	27,583	13.4
COST OF CASE SERVICES[2]		
Number Reporting	171,209	100.0
Clients Served Without Cost	10,674	6.2
$1 - $99	21,194	12.4
$100 - $299	24,995	14.6
$300 - $599	23,458	13.7
$600 - $999	19,744	11.5
$1000 - $1999	27,162	15.9
$2000 - $2999	16,331	9.5
$3000 - $3999	9,581	5.6
$4000 and over	18,070	10.6
Mean Cost, For All Clients Reporting	$ 1,683	
Mean Cost, For Clients Served With Cost	$ 1,795	

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[1] Encompasses the receipt of services by clients regardless of the source of funding. Figures are not additive because many clients receive more than one type of service.

[2] These are expenditures are made by State rehabilitation agencies for the purchase of services for clients. Excluded are administrative costs and counselor salaries.

Source: Annual Report of the Rehabilitation Services Administration on Federal Activities Related to the Administration of the Rehabilitation Act of 1973, as Amended: Fiscal Year 1987. Rehabilitation Services Administration, U.S. Department of Education.

training, and 10 percent trained at a college or university. Trends over the past few years indicate that the percentage of participants receiving on-the-job training, vocational school training, and personal and vocational adjustment training have increased over time, while relatively fewer participants are receiving college or university training. Although costs by detailed type of training service are not available, the Rehabilitation Services Administration reports that in FY 1986 "post-secondary instruction of higher education" cost $84.1 million, and all other types of training totaled $189.8 million.

6. Trade Adjustment Assistance

The Trade Adjustment Assistance Program (TAA), part of Title II of the 1974 Trade Act, is a support program designed to assist workers whose employment has been adversely affected by increased imports and foreign competition. Administered by the Employment and Training Administration of the Department of Labor through state employment security agencies, TAA provides both direct cash assistance (trade readjustment allowances -- TRA) and reemployment services -- job search, training, and relocation.

In terms of both funding and the number of people served, TAA cash assistance benefits form a large component of the program. However, the Omnibus Budget Reconciliation Act of 1981 placed greater emphasis on training and reemployment services. The Consolidated Omnibus Budget Reconciliation Act of 1985 required participation in a job search program as a condition to receiving TRA benefits. The Omnibus Trade and

Competitiveness Act of 1988 made training, subject to certain limitations, a requirement for receiving TRA and an entitlement of displaced workers eligible for the TAA program. Enrollment in a training program is now required for receipt of TRA except for individuals who have completed a training program or receive a waiver from the state exempting them from training. Under the 1988 law, TAA participants are also entitled to receive training to the extent appropriated funds are available.

TAA training activities may include on-the-job, vocational or technical training, and remedial education. In addition, they can be provided either by government agencies or private sources. Table 19 presents the latest available data on both the income and employment service components of the TAA program. In FY 1988, $54 million were allocated to the reemployment services component of the program, compared to $186 million spent for Trade Readjustment Allowances.[24] Reemployment services were provided to almost 13,000 individuals, 10,000 of whom received training. Other types of reemployment services, such as job search assistance and relocation, were provided to 2,645 individuals.

7. Refugee Resettlement Program

The Refugee Resettlement Program, administered by the Family Support Administration of the Department of Health and Human Services, is designed to assist refugees and entrants in becoming economically self-sufficient as soon as possible following their arrival in the United States. The program offers a wide range of services including

TABLE 19

TRADE ACT ACTIVITY
FISCAL YEARS 1987 AND 1988

Trade Readjustment Allowances

Fiscal Year	Number Paid	Amount Paid (in millions)	AWBA	Duration (Weeks)
1987	55,264	$209.4	$155.00	24.3
1988	46,700	185.8	163.00	24.3

AWBA - Average Weekly Benefit Amount

Trade Adjustment Assistance

Fiscal Year	Amount Allocated (In Millions)	Number of Workers		
		Training	Job Search	Relocation
1987	$49.9	18,000*	1,864	1,518
1988	$54.3	10,300	1,160	1,485

* A significant number of workers had training costs paid with JTPA funds during the time TAA funds were not available.

Notes: - All data for FY 1987 are preliminary.

- All data for FY 1988 are provisional - based on unedited data.

Source: Unpublished data, Employment and Training Administration, U.S. Department of Labor.

cash and medical assistance, social services, and preventive health services, in addition to overseeing the Voluntary Agency Matching Grant Program and the Targeted Assistance Grant Program. The social services component of the Refugee Resettlement Program includes English language instruction and a number of employment and training activities, such as employment counselling, job placement, and vocational training, although other services (e.g., translation, and orientation) are also provided.

All persons who meet federal refugee and entrant-status requirements and who have the appropriate documentation are eligible to receive refugee social services.[25] Close to 65,000 refugees/entrants were admitted into the United States for resettlement in FY 1987, and another 76,000 were admitted in FY 1988. Although the exact number of refugees receiving all forms of program assistance is not reported, the Refugee Resettlement Program states that approximately 64,000 refugees participated in employment services in FY 1988.

Federal assistance is provided through state-level resettlement programs which are responsible for the planning, administration, and coordination of program activities. A number of voluntary resettlement agencies and refugee mutual assistance associations also receive federal funding for direct service grants. In FY 1988, $347 million of program funds were granted to states and other grantees. Of this total, $57 million were allocated on a formula basis to states for social service activities, with funding levels based on the proportion of all refugees settling in a given state during the preceding three year period. All participating states received a minimum of $75,000 regardless of the size of their refugee population.

Data on the number of participants receiving employment and training services, and on the costs of these services, are not collected at the Federal level. In response to Congress' emphasis on early employment, however, the Refugee Resettlement Program has identified a set of priority services which include English language training and activities specifically related to employment. States are required to spend 85 percent of social services funds on these activities. Thus, at least $48.5 million of total state social services allocations were spent on employment and training programs and other priority activities.

8. Welfare Work Programs

A number of employment and training programs are specifically targeted to welfare recipients. Among them is the Work Incentive Program (WIN), which was established in 1967 under amendments to Title IV Part C of the Social Security Act. The aim of WIN is to help individuals on welfare receiving benefits from the Aid to Families with Dependent Children program (AFDC) to secure and retain unsubsidized jobs, and ultimately to help these individuals become self-supporting. In addition to the regular WIN program, other types of welfare work programs are available, including WIN Demonstration programs (WIN Demos), job search programs, The Community Work Experience Program (CWEP), and Work Supplementation/Grant Diversion programs. All states operate either a WIN or a WIN Demo program, and many operate welfare work programs under AFDC demonstration authority.

Registration in a welfare work program is a basic eligibility requirement for AFDC applicants and recipients over the age of 16.[26] At the federal level, the regular WIN program is jointly administered by the Employment and Training Administration of the Department of Labor and by the Family Support Administration of the Department of Health and Human Services (DHHS). At the state level there is a similar dual administrative structure involving the state employment service and state welfare agencies.

WIN Demos, authorized in 1981 under Title IV Part C, provide employment and training services very similar to those of the regular WIN program. The primary difference between the two programs is that the WIN demonstration option allows state welfare agencies to assume sole responsibility for the administration and oversight of the WIN Demo program. The motivation behind this option was to determine if WIN could be more effectively administered by state welfare agencies alone. In addition to WIN Demo programs, states may use AFDC demonstration authority (authorized under Title IV Part A) to conduct other programs such as job search, CWEP, and Grant Diversion.

States conducting job search programs require individuals to look for jobs while they are receiving AFDC benefits. While the programs vary across states, they typically involve providing instruction in interviewing techniques, methods of identifying jobs and completing employment applications, and other job-hunting support services.

Under the Community Work Experience Program (CWEP), states place AFDC recipients in public and private non-profit agencies so that they can develop work skills and establish a recent work history and employment references. The maximum number of required hours of work is calculated by dividing the amount of the AFDC payment (states have the option of including Food Stamp benefits) by the minimum wage rate.

Another AFDC work program option is Work Supplementation/Grant Diversion, established in 1984. States who choose this option either use an individual's AFDC benefits as a wage subsidy to encourage employers to hire the AFDC recipient or pool AFDC payments for groups of individuals using the funds to subsidize their employment. The jobs are usually in the private sector and provide participants with work experience and income. Although the length of the subsidized employment period varies from state to state, a minimum of 9 months is required for federal matching funds. At the end of this period, many program participants obtain an unsubsidized job from their employers.

During FY 1988, 25 states (including Puerto Rico, the Virgin Islands, Guam, and the District of Columbia) had regular WIN programs, and 29 had Win Demos. Ninety-three million dollars were granted to states to administer these programs. As of September 1985, an estimated 1.6 million individuals, out of a total AFDC caseload of 3.7 million families, were registered with a WIN or a WIN Demo program. Currently, 46 states have at least one welfare work program: 33 have Job Search, 30 have CWEP, and 26 have Grant Diversion/Work Supplementation. In FY 1988, the combined costs of welfare work programs for all states reporting was $178 million.[27] Half of this total, $89 million, came from federal grants. Since states provide different combinations of programs and different types of services within each program, it is not clear how much of the total costs were devoted to training per se, although it appears that training activities are limited to short-term job search assistance and subsidized employment activities. National estimates for FY 1987 indicate that monthly participation in CWEP was 49,000 individuals, and in job search, 171,000 individuals.[28]

The WIN program will only be in effect until October 1, 1990. Title II of the Family Support Act of 1988 will replace WIN with the Job Opportunities and Basic Skills Program (JOBS). The Act requires all states to implement the program which will "assure that needy families with children obtain the education, training, and employment that will help them avoid longterm welfare." A broad range of activities will be available through the JOBS program, including education, job training, and readiness activities. In addition, at least two of the following must be made available to JOBS participants: job search, CWEP or other work experience, grant diversion, and on-the-job training. As with WIN, program participation is required for non-exempt AFDC recipients.

9. The Food Stamp Employment and Training Program

The Food Security Act of 1985 required states to implement an Employment and Training (E&T) Program for their food stamp recipients by April of 1987. The purpose of the program is to assist able-bodied recipients in securing paid employment and in reducing their dependence on food stamps. At the federal level, the E&T program is administered by the Food and Nutrition Service (FNS) of the U.S. Department of Agriculture, whose primary role is to approve and monitor state-level program activities. The legislation was designed to give states maximum flexibility in designing their Food Stamp E&T program. States are free, subject to USDA approval, to determine the range of services provided through the program, which parts of the program are mandatory and which are voluntary, who is required to participate and who may participate in the program, and the level of program funding in excess of the basic Federal grant.[29]

A wide variety of services are available through state Food Stamp E&T programs. The most common are job search assistance, offered by 49 of the 53 state agencies (including the District of Columbia, Guam and the Virgin Islands), and job search training, provided by 39 state agencies.[30] More intensive services are also provided in many states: 33 agencies provide adult basic education, 33 provide vocational training, 14 provide work experience, and 8 provide workfare. Another 18 agencies provide other types of services such as on-the-job training, supported employment, vocational rehabilitation, and home-based employment. These services are delivered through a number of different channels, including traditional employment and training service agencies, such as the state employment security agencies and JTPA programs, local school districts, community colleges, and both public and private community organizations such as Goodwill and the Young Men's Christian Association.

About one million were served by the Food Stamp E&T program in FY 1988. Fifty-eight thousand of these individuals were volunteers, while the remaining participants were mandatory non-exempt registrants.

For the evaluation of E&T, data were collected from a nationally representative sample of 13,000 individuals eligible to participate in the program. The distribution of this sample by various socioeconomic characteristics is shown in Table 20. The majority of participants are between the ages of 22 and 40. The average age is 33 years. Over 60 percent of program participants are from minority groups and there are an equal number of males and females. The majority of participants are single and living alone. The educational background of E&T participants is generally quite low -- fewer than one-half of all participants have completed high school. Data on participants' employment experience show that fewer than one-half have worked any time during the preceding year, and 17 percent have never worked. Although the majority of participants live in a household in which only the participant is involved in the E&T program, over 15 percent live in households in which more than one individual is a Food Stamp E&T participant. The percentage of households receiving income from various sources, such as General Assistance (41 percent), AFDC (6 percent), and public housing assistance (2 percent) is also shown in Table 20.

Federal funding for the Food Stamp E&T program totaled $108.8 million in FY 1988. This figure includes $60 million for the basic federal grant allocated to states on the basis of the relative size of their food stamp program caseloads, $36.3 million for federal matching funds for additional program services, and $12.5 million for participant reimbursement.

10. Summary and Conclusions

This section summarizes our findings on the major federally supported training programs and provides the implications for policy

TABLE 20

FOOD STAMP EMPLOYMENT AND TRAINING PROGRAM
DISTRIBUTION OF PARTICIPANT CHARACTERISTICS
FISCAL YEAR 1988

	Percent
Age	
21 years or younger	13%
22 - 40 years	60
41 years and older	27
Sex	
Male	50%
Female	50
Race/Ethnicity	
White non-Hispanic	39%
Black non-Hispanic	53
Hispanic	7
Other	1
Marital Status	
Married	17%
Divorced/widowed/separated	30
Never-married	53
Education	
Less than grade 12	54%
High school graduate	37
Some college	8
College graduate	1
Labor Market Experience	
Worked during last 12 months	43%
Did not work during last 12 months	40
Never worked	17
Household Size	
1 person	54%
2 persons	21
3 persons	9
4 persons	8
5 or more persons	8
Household Composition	
Single person	54%
Two married adults with child(ren)	11
Two married adults	10
Single female with child(ren)	9
Other	17
Number of E&T Participants in Household	
1 participant	84%
2 participants	13
3 or more participants	3
Percent of E&T Participant Households Receiving Income from Various Sources at Time of Application/Recertification	
General Assistance	41%
Earnings	19
Social Security/Pensions	8
AFDC	6
Medicaid	6
Child Support	3
Unemployment Income	2
Public Housing	2
Other Housing Assistance	2

Note: Figures are based on data collected from a nationally representative sample of about 13,000 individuals eligible to participate in E&T.

Source: Evaluation of the Food Stamp Employment and Training Program: Report to Congress on Program Implementation, Food and Nutrition Service, U.S. Department of Agriculture, Washington, D.C.: December, 1988.

consideration. No judgments are made on the merits of individual programs because we have not conducted benefit-cost analyses on the programs.

1. There are 14 major programs that provide some degree of vocational training to participants and the two largest programs are the postsecondary vocational education program and the Title II-A program of the Job Training Partnership Act.

Table 21 lists the major training programs identified and provides information on federal expenditures and the number of participants. The largest programs are JTPA Title II-A training for economically disadvantaged youth and adults, and postsecondary vocational education. Vocational education serves the most participants, possibly as many as 4.2 million per year, and Title II-A of JTPA serves over 1.3 million participants per year. Federal expenditures for the JTPA Title II-A program are more than five times as large as for postsecondary vocational education ($1.9 billion for JTPA compared to an estimated $355 million for postsecondary vocational education). The reason for discrepancies between costs and enrollments is that JTPA is entirely federally funded, while vocational education receives only partial funding from the federal government.

All the training programs except vocational education have eligibility requirements. There are maximum income levels for eligibility for the JTPA Title II-A program, the summer youth program, the Job Corps, the Senior Community Service Employment Program, the Food Stamp Employment and Training Program, and the AFDC welfare work

Table 21

SUMMARY OF GOVERNMENT-PROVIDED TRAINING PROGRAMS

Program	Year	Federal Outlays[a] (millions)	Number of Participants Receiving Training and Related Services	Number of Participants Receiving Core Training
JTPA Title II-A	PY[b] 1987	$ 1,900	1,331,144	286,000 [c,d]
Summer Youth Program	FY[e] 1988	287 [f]	689,862 [g]	n/a
JTPA Title III	PY 1987	172	183,229	27,700 [d]
Native American Program	PY 1987	27 [f] 9.8 [h]	32,904	9,501 [c]
Migrant and Seasonal Farmworkers Program	PY 1987	42 [f] 18.8 [h]	18,187 [i]	6,536 [i]
Job Corps	PY 1987	34.6 [j] 73.1 [k]	103,806	103,806
Veterans' Employment and Training	PY 1987	10.6	15,000 [l]	n/a
Vocational Education	PY 1988	335.2 [m]	n/a [n]	n/a [n]
Senior Community Service Employment Program	PY 1987	326	65,756	n/a
Vocational Rehabilitation	FY 1988	1,200	918,900 [l]	n/a
Trade Adjustment Assistance	FY 1988	54.3 [o]	12,945	10,300
Refugee Resettlement Program	FY 1987	48.5 [p]	64,000	n/a
WIN/WIN Demo	FY 1988	92.5	1,600,000 [q]	n/a
Other Welfare Work [r]	FY 1988	89	48,654 [s] 170,653 [t]	n/a
Food Stamp E&T Program	FY 1988	108.8 [u]	1,006,000	n/a

[a] Program total, unless training costs are available.
[b] Program year (July 1 - June 30).
[c] May include basic skills education.
[d] Number of PY 1967 enrollees with classroom training as initial program assignment.
[e] Fiscal Year (October 1- September 30).
[f] Training costs only.
[g] Agency has no formal definition of training; figures are self-reported.
[h] Classroom training.
[i] Number of terminees receiving service.
[j] Basic education.
[k] Vocational training.
[l] All program participants.
[m] Forty percent of $888 million for postsecondary vocational education.
[n] Number of participants may be as high as 4 million; accurate data are not available.
[o] Not including TRA benefits.
[p] Social service funding for priority services, not limited to training.
[q] Number of registrants as of September 1985.
[r] Job Search, CWEP, Grant Diversion/Work Supplementation.
[s] CWEP only, FY 1987 monthly participation.
[t] Job Search only, FY 1987 monthly participation.
[u] Includes $12.5 million in participant reimbursements.

programs. The remaining programs have eligibility requirements based on personal characteristics, e.g., farmworkers, Native Americans, individuals with disabilities, service in the armed forces, and loss of a job because of imports, a plant closing, or a major layoff. Nine of the programs are administered through the Department of Labor, two are administered through the Department of Health and Human Services (refugee resettlement and welfare work), two programs are administered through the Department of Education (vocational education and vocational rehabilitation), and the Food Stamp E&T program is administered by the Department of Agriculture.

A natural policy issue is whether there is a need for so many programs. Most of the programs serve special target groups, and it may be more efficient to serve these groups through distinct programs. There is coordination of the nine Department of Labor programs because they are all administered by the same cabinet department, and most are in the same agency (the Employment and Training Administration). The Reagan Administration proposed abolishing the TAA program and serving the affected workers under Title III of JTPA, but Congress has continued both programs.

The greatest overlap appears to be between the two largest programs -- the JTPA Title II-A program and postsecondary vocational education. Both programs provide occupational classroom training, and in many instances community colleges provide the training for both programs.

2. The data available on participants and services provided are very limited for many of the programs and it is not always possible to determine the number of participants, their characteristics, or the services they receive.

With the exception of the Job Training Partnership Act programs, it is often difficult, if not impossible, to obtain data on the characteristics of program participants and the services they receive. The most severe data gaps are for the vocational education program where one cannot tell how many individuals received services financed partly or completely with federal funds. To obtain estimates, the NAVE staff had to commission special studies (to find the split between postsecondary and secondary vocational education) and analyze longitudinal data bases collected for other purposes.

Many of the programs maintain little data on training provided, or they do not differentiate between vocational training and basic skills training. In some cases this is because training is not a major goal of the program (e.g., welfare work programs). However, it is difficult to make an assessment of the adequacy of the mix of training programs without some knowledge of the services being offered.

Data collection is not inexpensive, and serious consideration should be given before any major efforts are initiated. In addition, the Paperwork Reduction Act requires that the benefits of any data collection effort be weighed against the costs. However, the other large programs (such as vocational education and welfare work programs) should consider the development of comprehensive data collection systems similar to the ones used by the Department of Labor for the Title II-A and Title III programs.[31] Such data need not be collected annually if cost is a major concern.

3. Many of the participants in "training" programs do not receive occupational classroom training.

None of the programs considered spend as much as half their funds on classroom occupational training, and it is not clear that the proportion should necessarily be increased. In vocational education, for example, students take academic as well as vocational courses, and the mix of both types of courses may prepare the students better for the labor market. In JTPA Title II-A programs, many participants receive job search assistance, on-the-job training, or basic skills training rather than occupational classroom training, but these types of services may be more appropriate for them.

The point is not that too little occupational training is being provided. Rather, occupational classroom training is one of a number of approaches that can be used to prepare individuals for the labor market. The most commonly used approaches are:

- Basic skills and remedial education. Given the increasing needs for workers who can read and perform arithmetic satisfactorily, JTPA, vocational education, and other programs sometimes provide basic skills and remedial education to participants who lack such skills.

- Classroom training. Workers who possess adequate basic skills can gain the specific skills required by employers by enrolling in a special class.

- Work experience and community work experience programs (CWEP). These programs are typically offered to individuals with limited work experience. The programs are expected to provide personal skills to the participants and provide them with credentials for unsubsidized jobs. In the case of work experience, the programs also provide financial support; CWEP is sometimes used as a quid pro quo for receiving AFDC benefits.

- On-the-job training, grant diversion, and work supplementation. These programs provide jobs with private-sector employers. They are frequently used for workers with most of the skills needed for a job and who are expected to gain any additional skills needed within six to nine months of subsidized employment.

- Job search assistance. These programs are used for employable workers who need assistance in how to seek work and present themselves at interviews.

Depending upon an individual's experience and attributes, one or more of the approaches may be most effective. Additionally, the costs of the various approaches span a large range -- job search assistance can be quite inexpensive, but subsidizing a worker's wages for six months in on-the-job training can easily cost ten times as much. The efficiency tradeoff between costs and benefits must be considered as well as the equity tradeoff between serving a large number of participants with inexpensive services rather than serving a smaller number of participants with richer services. The former tradeoff can be resolved through effective evaluations, but the equity issue requires policy consideration.

4. Few of the training programs have formal links with employers to assure that the training and related services meet employer needs.

We did not conduct a formal large-scale survey to address the issue of integration of program content with employer needs, but it appears that few of the programs have instituted formal methods of integrating the programs with the needs of employers. The major exception is the JTPA program, where the private industry councils (PICs) for each local program must review and approve the training plans. Although the evidence from available research studies does not indicate that the PICs have had a dramatic influence on the programs, the preponderance of the evidence does appear to show that the private industry councils have helped to integrate the content of training programs with the needs of the private sector. Consideration should be given to developing similar formal linkages in other major training programs.

NOTES

1. Unlike most federal programs, JTPA operates on a program-year basis, rather than a fiscal-year basis. The program year begins July 1 of the same calendar year, i.e., program year 1987 begins July 1, 1987.

2. All costs incurred under performance-based contracts are considered training expenses. In addition, Section 108 of the Act lists certain conditions when the 30 percent cap can be exceeded.

3. Unless otherwise noted, all data on JTPA Title II-A participants are based on the Job Training Quarterly Survey (JTQS), a quarterly survey based on a random sample of participants. The data are reported in U.S. Department of Labor (1988).

4. The low levels of work experience may result from statutory limitations on the proportion of funds that SDAs may spend on non-training services.

5. Youth aged 14 and 15 may also participate in Title II-B programs if they are included in service delivery area (SDA) job training plan.

6. Unpublished data from the Employment and Training Administration, U.S. Department of Labor.

7. JTPA specifies three criteria for identifying dislocated workers. These are workers who: (1) have been terminated or laid off or have received a notice of termination or lay-off from employment, are eligible for or have exhausted their entitlement to unemployment compensation, and are unlikely to return to their previous industry or occupation; (2) have been terminated, or who have received a notice of termination of employment as a result of any permanent closure of a plant or facility; or (3) are long-term unemployed and have limited opportunities for employment or reemployment in the same or a similar occupation in the area in which such individuals reside, including any older individuals who may have substantial barriers to employment by reason of age. Amendments to JTPA in 1986 extended eligibility to formerly self-employed workers, e.g., dislocated ranchers and farmers.

8. Unpublished data from the Office of Special Targeted Programs, Employment and Training Administration, U.S. Department of Labor.

9. Unpublished data from the Employment and Training Administration, U.S. Department of Labor.

10. Unpublished data from the Employment and Training Administration, U.S. Department of Labor, 1989.

11. See Job Corps in Brief: Program Year 1987, U.S. Department of Labor, Employment and Training Administration, 1988.

12. These Job Corps centers are also called Civilian Conservation Centers (CCCs) since they are modeled on the New Deal's Civilian Conservation Corps. CCCs are usually located on public lands (e.g., national parks and forests) and conduct environmental and natural resource projects.

13. See Job Corps In Brief: Program Year 1987, U.S. Department of Labor, Employment and Training Administration, 1988.

14. Unpublished data from the Veterans Employment and Training Service, U.S. Department of Labor.

15. Some sources indicate that federal funds provide about 10 percent of all funding for vocational education. There does not appear to be adequate documentation to support or refute this conjecture.

16. Program improvement includes a number of uses, but it is believed that a majority of the funds are used for purchasing equipment.

17. A major factor in the high participation rate in vocational education at the secondary level is that 65 percent of all high school graduates take typing.

18. The Department of Education formerly collected information on students enrolled in vocational education through the Vocational Education Data System (VEDS), but the system was discontinued several years ago because of data quality problems.

19. The Department of Education is currently developing a system to obtain data on vocational education students based on surveys and other secondary sources such as the High School and Beyond Survey. The system is referred to as Data on Vocational Education (DOVE).

20. NAVE staff indicated that The High School and Beyond survey could be used to estimate the proportion of students who self-report that they are enrolled in nonbaccalaureate programs, but there may be significant self-reporting errors.

21. See Annual Report of the Rehabilitation Services Administration on Federal Activities Related to the Administration of the Rehabilitation Act of 1973, As Amended: Fiscal Year 1987, U.S. Department of Education, Rehabilitation Services Administration, 1988.

22. Note that since these data only apply to cases which were closed during FY 1985, they may not exactly reflect the total population of individuals being served by the program.

23. Closures from the active caseload are classified as rehabilitated if they satisfy the following conditions: (1) have been declared eligible for services, (2) have received appropriate diagnostic and related

services, (3) have had a program for VR services formulated, (4) have completed the program, (5) have been provided counseling, and (6) have been determined to be suitably employed for a minimum of 60 days.

24. Unpublished data from the Office of Trade Adjustment Assistance, Employment and Training Administration, U.S. Department of Labor.

25. In order to enter the United States as a refugee, a person must have been persecuted or have a well-founded fear of persecution on account of race, religion, nationality, membership in a particular social group, or political opinion; be of the types of refugees of special humanitarian concern to the United States; be admissable under U.S. law; and must not be firmly resettled in any foreign country.

26. Individuals are exempt if they are unable to participate due to illness, incapacity, advanced age, full-time student status, remoteness from a work incentive (WIN) program site, the need to care for an ill or incapacitated member of household, or working at least 30 hours per week. A parent caring for a child under the age of 6 is also exempt and in two-parent family, one parent is exempt if the second parent is working.

27. Unpublished data from the U.S. Department of Health and Human Services.

28. Background Material and Data on Programs within the Jurisdiction of the Committee on Ways and Means, 1989 Edition. U.S. House of Representatives.

29. Evaluation of the Food Stamp Employment and Training Program: Report to Congress on Program Implementation, Food and Nutrition Service, U.S. Department of Agriculture. Washington, D.C.: December 1988.

30. Data on the types and costs of services provided by the Food Stamp E&T programs are based on state plans submitted to FNS for FY 1988, required state quarterly performance reports for FY 1988, and an inventory of program operations for a nationally representative sample of 55 Food Stamp Agencies participating in an evaluation study of the E&T program. Program operations planned by states and estimated costs may not reflect actual FY 1988 service and financial characteristics.

31. The Department of Labor collects JTPA data through an administrative reporting system, the JTPA Annual Status Report (JASR) and obtains more detailed data on participants with a random sample through the Job Training Quarterly System (JTQS).

REFERENCES

National Commission for Employment Policy. The Job Training Partnership Act. Washington, DC: US Government Printing Office, 1987.

National Commission for Employment Policy. JTPA Performance Standards: Effects on Clients Services and Costs. Washington, DC: US Government Printing Office, 1988.

U.S. Department of Education. National Assessment of Vocational Education. First Interim Report from the National Assessment of Vocational Education, January 1988. Washington, DC: 1988.

U.S. Department of Education. National Assessment of Vocational Education. Second Interim Report from the National Assessment of Vocational Education, September 1988. Washington, DC: 1988.

U.S. Department of Education. Office of Educational Research and Improvement. National Center for Education Statistics. Digest of Education Statistics, 1988. Washington, DC: U.S. Government Printing Office, 1988.

U.S. Department of Education. Office of Educational Research and Improvement. National Center for Education Statistics. Undergraduate Financing of Post Secondary Education: A Report of the 1987 National Postsecondary Student Aid Study. Washington, DC: U.S. Government Printing Office, June 1988.

U.S. Department of Education. Office of Special Education and Rehabilitation Services. Rehabilitation Services Administration. Annual Report of the Rehabilitation Services Administration on Federal Activities Related to the Administration of the

Rehabilitation Act of 1973, As Amended, Fiscal Year 1987. Washington, DC: U.S. Government Printing Office, 1988.

U.S. Department of Health and Human Services. Family Support Administration. Office of Refugee Resettlement. Report to the Congress: Refugee Resettlement Program. Washington, DC: U.S. Government Printing Office, 1988.

U.S. Department of Labor. Division of Performance Management and Evaluation. Office of Strategic Planning and Policy Development. Summary of JTQS Data for JTPA Title II-A and III Enrollments and Terminations During PY 1987. Washington DC: December 1988.

U.S. Department of Labor. Employment and Training Administration. Job Corps in Brief, Program Year 1987. Washington, DC: 1988.

U.S. House of Representatives. Committee on Ways and Means. Background Material and Data on Programs within the Jurisdiction of the Committee on Ways and Means, 1988 Edition. Washington, DC: U.S. Government Printing Office, 1988.

10. THE EFFECTIVENESS OF GOVERNMENT TRAINING PROGRAMS

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The Commission on Workforce Quality and Labor Market Efficiency is charged with making recommendations for the Department of Labor and the nation to increase the excellence of the American workforce. Among the Commission's responsibilities is an examination of the roles and effectiveness of privately and publicly provided job training and education. This paper is designed to provide information on the effectiveness of government training programs for the Commission's deliberations.

INTRODUCTION

The federal government has provided support for public job training efforts for a number of years. During the 1960s most of the programs were offered under the Manpower Development and Training Act (MDTA). In the seventies, the Comprehensive Employment and Training Act (CETA) was the major vehicle and during the period since 1982, the Job Training Partnership Act (JTPA) has been the umbrella for most training activities. There have been additional programs directed toward specific groups--dislocated workers, individuals on public assistance, and youth.

Although the enabling legislation and the structures under which the programs have been offered have changed over the years, the activities themselves have been fairly consistent. Classroom basic skills training, work experience, specific skills training, on-the-job training, and job search assistance have been a part of the federal government's training "arsenal" for most of the twenty-five year period. Therefore, an assessment of the effectiveness of training programs can stretch across different legislative initiatives. Likewise, even though the legislation has been targeted toward different groups, the characteristics of participants in the programs have been similar enough to allow comparisons to be made in terms of the effectiveness for specific groups.

This paper does not report on new evaluation research, but instead synthesizes the existing body of work for these sets of government programs. The emphasis is on how effectiveness relates to a set of objectives that the federal government might have in its pursuit of increased efficiency of the workforce. Consequently, the paper begins with a delineation of the alternative objectives that policymakers may have in developing and implementing training programs. Then several groups that are most likely to be in need of government-subsidized employment and training programs are identified. The third section of the paper reviews the literature on the effectiveness of training programs for the groups identified and relates the success to the objectives outlined in section two. The last section of the paper presents some public policy questions.

ALTERNATIVE OBJECTIVES FOR GOVERNMENT TRAINING PROGRAMS

For most of the twentieth century increased productivity has been instrumental in the growth of the American economy. Denison (1979) and others have estimated that increased education and training have been major contributors to increased productivity and economic growth in the United States since 1930. Education and training are also associated with higher earnings and lower levels of joblessness for individual workers. Therefore, training is beneficial both to the individual and to society.

Training may be needed by workers at various points in their working lives--when the worker is preparing to enter the work force and when the worker is moving (or trying to move) from one job to another. The training that is needed may be basic skills training, such as reading and basic mathematics, or it may be technical training to perform a specific job or progress within a given occupation.

In the past, basic skills training has been seen primarily as the responsibility of the public school system. It has been expected that individuals would leave the school system with a basic grasp of reading, writing, mathematics and other subjects. The acquisition of job specific skills has varied. For certain occupations and for entry level jobs the worker has also been expected to acquire the skills outside of the workforce, either through private training programs paid for solely out of individual and family resources--in school or apprenticeships--or through education and training programs subsidized by public funds. Once a worker has obtained a job, further training can be provided on the job or in formal training programs paid for by either the employer, the employee, or some combination of the two. The extent to which the employer is willing to pay is related to the proportion of the benefits from training that accrue to the company. If the training increases the likelihood that the employee will look for and obtain a job with a different employer, the current employer is unlikely to fund it.

The projections for the American workforce suggest that training provided to workers before they enter the workforce and over the course of their work lives will be critical to their performance in the U.S. economy and to the United States' performance in the world economy. Some of this training can be provided by the private sector, but clearly there is a role for the public sector in terms of planning and in terms of service delivery.

For the most part, the gains from education and training accrue to either the worker or the employer and, therefore, the two should be willing to bear the cost of the training. However, there are several social objectives that would lead the government to participate in the training process. When there are a sufficient number of skilled workers in the available labor pool, expansion in employment can take place with minimal disruption to production. However, when there is a shortage of skilled workers, production is disrupted and labor costs increase as employers bid up wages to attract the limited number of workers available. While much of the shortage may disappear in time, the economy suffers from lags in production and that affects domestic Gross National Product and reduces the United States' competitiveness abroad. Therefore, society would benefit if the government facilitated the process by which workers upgraded existing skills and acquired new ones. This may be especially true if employment expansion is taking place in small firms which may not have the working capital or management cadre to provide training for their workers.

Another societal objective may be to assist individuals who could not otherwise obtain employment at wages high enough to make them self-sufficient. Individuals who lack basic or job-specific skills have difficulty obtaining moderate or high wage jobs. The society then bears a double burden. The productive work effort is lost and the government frequently pays costs in terms of public assistance income and through crime and other anti-social behavior. During the past fifteen years, workers who did not have basic skills and training to take new job opportunities were increasingly likely to leave the labor force. This group was disproportionately composed of workers with less than a high school education (Simms, 1986).

Adult workers can be divided into four groups--employed workers, displaced and unemployed workers, returning workers, new entrants with little or no prior work experience. Each group has different needs as far as training is concerned. The currently employed worker may not be in need of immediate training, but it is likely that he or she will need additional training over the course of the life cycle in order to perform the current job better and to prepare for other jobs. Displaced workers can be subdivided into those who have no reemployment problems, those who have good job skills but have poor job search skills and those who have fewer transferable job skills and/or have low literacy.

The problems of the low-skilled jobless also apply to those new entrants to the work force who have had little or no prior work experience. Women who are long-term welfare dependents fall into this group. Most have very little work experience and testing in several locations has verified that many have basic skills deficiencies (Nightingale and Burbridge, 1987). Youths are similar to this group in that they have no work experience. In addition, a substantial proportion of the noncollege youth population, especially those who have not completed high school, lack basic skills as well.

To summarize, the societal objectives in providing employment and training programs may include:

1. Training for mobility--both intrafirm and interfirm--in order to reduce disruptions associated with technological and structural change;
2. Increasing skill levels--current workers, new entrants, and returning workers, in order to increase productivity and raise income levels.

Identifying the appropriate public sector training programs for achieving either objective is dependent upon the evaluation of program performance for different subgroups in the population. Evaluation can take place on a number of levels. One measure of evaluation would be how well the program is carried out--is it efficiently run, does it have appropriate outreach, is it serving the target population? The next level of evaluation would be what effect it had on the participants--are individuals placed in the program that best fits their needs, does it have positive outcomes?

Answering the last question is not simple or straightforward. It is certainly possible to compare the situation of the participant before program entry with his or her situation after program exit, but this gross impact approach would not take account of the fact that the individual's situation might have changed even if they had not been in the program. If their employment and earnings situation would have improved, then using the gross impact as a measure would overestimate the impact of the program. On the other hand, it is possible that their situation would have deteriorated in the absence of intervention. In this case, the gross measure would underestimate the impact of the program.

To arrive at a measure of the net impact of a program it is necessary to have a group with which to compare the participants, a group that has many characteristics that are similar to those of program participants except for the fact that they do not receive treatment. It is possible to get a control group of this type by randomly assigning program applicants to treatment (admit to the program) and nontreatment (reject the applicant) groups. However, this approach is usually avoided by program operators because of the possibility that an individual would be denied access to a program that could substantially improve their lives (Heckman, et al., 1987). The alternative to random assignment has been the use of comparison groups, individuals who share many of the characteristics of the treatment group, but who have not received the treatment.[1] However, in this situation, there may be a number of differences that are not measured, such as motivation, etc. Researchers attempt to correct for these differences by the use of various modeling and correction techniques to control for sample selection bias and other complicating factors (Barnow, 1987).

Finally, evaluating a program may also involve comparing the gains from the program--employment and earnings for the individual, increased tax revenues and reduced welfare and anti-crime costs for society--with the costs of the program--public expenditure outlays and foregone income by the participant and, possibly, displacement of other workers from jobs. Such a cost-benefit analysis would involve estimating the costs and benefits over a period of time, which would include an estimate of whether the program benefits decayed or were enhanced over time (Barnow, 1989; Bassi, 1983).

GOVERNMENT TRAINING PROGRAMS, 1962-1989

Following World War II, the interest in employment and training programs dates from the Manpower Development and Training Act of 1962. This program was originally designed to retrain individuals who were displaced from their jobs due to automation. In the early years of the program the majority of enrollees were unemployed family men who had been employed at least three years before their job loss. However the economic expansion of the mid-1960s and the interest in the War on Poverty led federal policymakers to change the program's focus. By 1966, the majority of enrollees were from disadvantaged groups with more basic employment problems. In 1973, MDTA was replaced by CETA, which was more explicitly designed to assist disadvantaged groups (Ginsberg, 1980; Levitan and Gallo, 1988; Barnow, 1989).

While two types of activities were possible under MDTA, formal institutional training and on-the-job training, CETA included a more diverse set of activities, reflecting the greater needs of the CETA target population. Under CETA, adult work experience was included to provide those with no prior labor market experience a familiarity with the "world of work." Classroom training was added for those who lacked basic skills and for those occupations in which the classroom was deemed the most appropriate setting for skill acquisition. So while MDTA included two types of activities, CETA provided four basic activities: classroom training, work experience and public service employment (PSE), on-the-job training (OJT) with a private employer, and direct job placement.

JTPA, which replaced CETA in 1982, provides all of the same activities that were available under CETA, except for public service employment. However, it does limit the use of work experience and stipends for participants are subject to a severe budget restriction. JTPA's primary target groups are disadvantaged youths and adults (especially welfare recipients), under Title II and displaced workers, under Title III.

In addition to these major programs, there have been other employment and training programs designed for or available to adults. These include the Work Incentive program (WIN) for welfare recipients (first adopted in 1967), the Community Work Experience Program (CWEP), "workfare", programs offered under the Trade Adjustment Assistance Act (TAA) and various local demonstration programs sponsored by both governmental and nongovernmental units. Youth have been included in the major adult programs and have had summer employment and Job Corp programs available under both CETA and JTPA. In addition, several youth initiatives, including the Youth Employment Demonstration Program Act (YEDPA), have been tried in the past 25 years.

The framework for reviewing the programs is as follows: within each major program, the major target groups and their needs are identified. Then the program activities they participated in are summarized and the effectiveness is measured. Several factors are considered:

1. Did the program serve those it was designed to help and what percentage of the eligibles were served?
2. What types of activities did the participants have access to?
3. What were the outcomes?

Training Programs Under CETA

As indicated earlier, CETA was designed to be a program that targeted disadvantaged individuals. Over the nine years that CETA was in operation, the program standards and eligibility criteria were revised in order to restrict the program to individuals who were thought to be most in need of the type of assistance offered by CETA (Ginsberg, 1980; Bassi, 1983). A review of the characteristics of program participants indicates that, on many measures, participants met the "disadvantaged" standards set as one of the program goals. However, there are also some indications that during the early program years, CETA did not serve women at their levels of eligibility and that women in CETA were underrepresented in nontraditional programs and in the higher wage programs such as OJT (Berryman, 1981; Simms, 1985). Some analysts have also asserted that the program took the best of the group eligible to participate (this is called "creaming") (Levitan and Gallo, 1988).

In order to facilitate the evaluation of CETA programs, the Department of Labor established a database which consisted of a sample of program participants. A comparison group was developed from the Current Population Survey to go with this Continuous Longitudinal Manpower Survey (CLMS). The original evaluation research on CETA was completed by Westat, Inc., which had developed a set of matching techniques for the comparison group (Bryant and Rupp, 1987). Later evaluations by other researchers relied heavily on the Westat comparison group, but varied in a number of other respects, such as the particular groups of CETA participants included in the evaluation, the matching procedures utilized, the postprogram period used for observing program impacts, and the statistical equations used for estimating the program effects (Barnow, 1987).

Estimating Benefits.

As a result of the differences in approach, the estimates for the net impact of CETA vary widely. (See the Appendix for a summary of the different techniques used and the impact estimates from major CETA evaluations.) Reconciling these very different estimates has been difficult to do. And determining which estimates (or magnitude of estimates) are closest to the true gain to participants has been practically imposs[illegible]e. Some researchers (LaLonde and Maynard, 1987) have asserted that it is not possible to find estimation techniques that properly correct for all the differences between the participants and the control groups in the case of nonexperimental data--those that use comparison groups and not random assignment, but others have produced some evidence to the contrary (Heckman, et al., 1987).

Even though the true estimates for program gains have not been determined with precision, some patterns are consistent across research studies. The earnings gains from CETA were judged to be relatively modest, between $200 and $600 for program participation, although the gains from some CETA activities were estimated to be somewhat higher. Most evaluations found the program to be more effective for women than for men. In fact, few studies found consistent positive and significant gains for minority men. Public service employment and OJT were the programs most likely to show any significant positive effects for men (Bassi, 1983; Barnow, 1987). For the most part, the increased earnings appeared to be in the form of greater employment (more hours worked) and not in the form of higher wage rates. This would certainly help to explain the gender differences since women are more likely to be in the position of increasing the number of hours worked, while disadvantaged males may be more likely to be working before program participation but at chronically low wages (Burbridge, 1986).

Costs and Cost Effectiveness.

Program activities in the employment and training program vary widely in terms of costs. For low intensity programs such as job search assistance, cost estimates are between $50 and $250. More intensive programs have costs ranging from $1500 (for classroom training) to $5,000 to $10,000 per participant for work experience, OJT, and PSE activities (Bassi, 1985; The Urban Institute, 1986).

The wide fluctuation in estimated net impacts makes it difficult to conduct cost-benefit analyses. Even if the direction of impact is judged to be fairly uniform, the inability to obtain a precise measure limits the ability to construct a cost-benefit ratio. Based on the findings for women, however, it could be argued that the more effective programs are the more costly ones. In order to judge this program cost effective, it may be necessary to prove that the benefits do not decay rapidly and therefore the present value of the benefit stream does exceed the costs for society. Bassi (1983) did estimate cost-effectiveness for the four major CETA programs for economically disadvantaged enrollees (who had higher gains than the nondisadvantaged) and found only classroom training and on-the-job training to be cost-effective, with benefit cost ratios of 1.05 and 1.11 when benefits do not decay for five years and 1.69 and 1.80 if the benefit stream lasts for ten years.

Training Programs Under JTPA

Criticism of the operation of CETA, especially the PSE component, led to the restructuring of the employment and training delivery system under the Job Training Partnership Act. In addition to reducing the amount of money available for job training, the new law decentralized the program, provided for more state oversight and introduced more accountability. States were given more flexibility in the administration of the program and Service Delivery Areas (SDAs) were required to establish performance standards to hold service providers accountable for outcomes from the use of funds. While the regulations allow SDAs to set their own performance standards, within given parameters, the majority started the program with employment and earnings standards (Nightingale, 1985). Some of the early reviews of the implementation of JTPA asserted that these performance standards led to program structures that emphasized quick treatment and screened out the hard to serve. This appeared to be a particular problem for youth who were high school dropouts. Some program evaluators noted that youth were being asked to take literacy tests and were rejected if they did not read at a ninth grade level (Orfield and Slessarev, 1986; Levitan and Gallo, 1988). This tendency was aggravated by a reduction in funds that limited the percent of the eligible population that could be served. Consequently, it was argued, the program was not serving the mandated populations--youth and disadvantaged adults--to the extent that it should.

Is JTPA Serving the Target Population?

An analysis of JTPA participation by the National Commission on Employment Policy (Sandell and Rupp, 1988), disputed the argument that JTPA was not serving the mandated population by comparing data on JTPA participants in Program Years 1984 and 1985 (obtained from the Job Training Quarterly Survey) with estimates of the eligible population constructed from the March 1986 Current Population Survey. They defined the true target population as those who met the JTPA eligibility standards and who were unemployed. The argument they developed was that a true indication of willingness and availability to participate in a JTPA program was to be unemployed (not employed and actively looking for work). By this definition, they concluded that JTPA was serving about 13 percent of the eligibles who were likely to volunteer for program participation. This is a rate substantially higher than other estimates, since it eliminates individuals who are either employed or not in the labor force (about 88 percent of the eligible population at the time) from consideration. Using their definition of the "active eligible", the researchers found that welfare recipients and minorities were served at rates comparable to their representation in the eligible population and youth were overserved. The only population they identified as being underserved was adult high school dropouts. While they were 38 percent of the unemployed eligibles, they were only 26 percent of the JTPA participants.

There are some drawbacks to the Sandell and Rupp approach to defining the group of eligibles that are likely to enroll in JTPA. For youth the unemployment measure ("are you actively looking for work") is much more unreliable as an indication of interest in and willingness to participate in an employment and training program. The labor market status of youth is much more fluid, with movement in and out of the labor force being quite volatile. Moreover, since the goals of employment and training programs for youth are often broader than immediate postprogram employment, the concept that may work for adult males, will probably be less useful for youth. It may also be somewhat problematic for women on welfare as well. The income likely to be generated by employment without skill enhancement would leave many welfare recipients financially worse off than they are on public assistance and the lack of affordable child care could also reduce their likelihood of actively seeking work. That may not mean that they are unwilling to participate in a training program that would increase their wage earning capacity, providing child care were available.

Evaluations of Title II Programs

When JTPA was initiated, the evaluation plan was to continue with the type of database that was available under CETA. However, a review of the CETA evaluations and other evidence led a Labor Department panel to recommend the abandonment of the Job Training Longitudinal Survey in favor of a random assignment experiment and research on structural modeling that would resolve the problem of selection bias (Stromsdorfer, 1987). That evaluation is currently underway. In the meantime, the data on the impact of JTPA is quite limited. The most recent national study of JTPA is the Department of Labor's Inspector General audit (DOL, 1988). In addition, several states have undertaken evaluations of their own programs. Two of these studies are reviewed here.

The Inspector General (IG) report is not a net impact analysis. Instead, it is a review of the characteristics of the participants and an analysis of the postprogram outcomes. The audit is based on 58 sites selected for review. No comparison or control group is included so that it is hard to say definitively how these outcomes compare with what would have happened in the absence of program participation.

The report's review of program participation led the Inspector General's Office to assert that the program has not been targeting the hard-to-serve population. An analysis of the age, educational attainment, work history, and receipt of public assistance of participants was conducted. The IG found that 60 percent of the participants had a high school education or better and the typical participant had prior work experience. One-half of the adults received nonoccupational training, the majority getting job search assistance. Of the one-half receiving occupational training, the group was almost evenly split between OJT and classroom training. The audit was fairly critical of the programs offered, asserting that 60 percent of the OJT participants would have been hired by the employer in the absence of a program and pointing to the fairly short periods of program involvement. Job search participants were only in the program for one month, remedial education participants for three months and occupational training enrollees for an average of six months.

While placement rates were fairly high, with 70 percent of program terminees entering unsubsidized employment, only 58 percent remained on the job in which they were placed for more than 4 months. Sixteen percent were in second jobs and 26 percent were unemployed. The vast majority (70 percent) were earning less than $5 per hour and only the participants who were under the age of 35 showed an increase in wages over pre-program earnings. Among youth, 50 percent of those not entering unsubsidized employment had other positive outcomes such as enrollment in other training (45 percent), attainment of other employment competencies (34 percent), school completion (16 percent), and enrollment in apprenticeship programs or the military (5 percent).

Several states have undertaken evaluations of their JTPA programs, using guidelines similar to those issued by the National Commission on Employment Policy and reports from Indiana and Nevada are discussed here.

The state of Indiana conducted a net impact analysis evaluation of its JTPA program for individuals who were in the program between October 1, 1983 and March 31, 1984 (State of Indiana, 1986). The comparison group used for the analysis was Employment Service applicants. The two groups showed similar declines in earnings prior to application to the respective activities. However, there were differences in the demographic characteristics of the two groups. The Employment Service applicants were more likely to be white, more likely to be female; they were slightly older and less likely to be on welfare.

Unlike the CETA evaluations, the Indiana study found positive outcomes for all participant groups examined. For men who participated in 1983-84, the net income gain in 1985 (post-program year) was $1400 (in constant 1983 dollars). White women had net income gains of $1000 in the first postprogram year. No gains were calculated for minority women because of concerns about the dissimilarities between the participant group and the comparison group for minority women. Welfare recipients had increases in net income of $1200, an amount equivalent to their preprogram annual earnings. The welfare grant reductions were $105 per month, an amount that peaked approximately 12 months after program termination. This peak occurred because many welfare recipients were able to move off welfare within two years without program intervention. The analysts attributed the large net gains for welfare participants to the fact that the comparison group is heavily weighted by WIN mandatory individuals who are required to register for work, but who are probably not extremely motivated.

The findings of positive impacts for males is somewhat surprising, given the fairly consistent findings of no gain under CETA. Moreover, while there were no significant differences by race or ethnicity, measured impacts were highest for Hispanic males, next highest for black males, and lowest for white males. Since minority males were least likely to have gains under previous programs, these findings raise several questions. The study cites the absence of stipends as a possible explanation, arguing that males who are enrolled in JTPA really have to be motivated while those who were in CETA programs were motivated primarily by the stipend. However, the choice of a comparison group may also have affected the findings. The black male JTPA participants were more likely to be high school graduates and were more likely to be veterans. Both factors should have made them more attractive to employers. On the other hand, the participants had a very large preprogram dip in earnings that began four years before program enrollment, while the ES applicants had dips two years prior to the enrollment period, which would suggest that intervention was necessary for the program participants to recover income. Given that Indiana is a state that underwent severe employment problems as a result of both cyclical and industrial change, it might be expected that males who may have lost jobs in manufacturing industries would need a strong intervention to move them back onto a high and sustained earnings path.

The Nevada evaluation also used Employment Service applicants as a comparison group, and they found similar earnings gains for males (Hanna and Turney, 1988). This study covered JTPA participants, aged 22 to 65, enrolled in Nevada programs between July 1, 1985 and June 30, 1986. The researchers estimated the net income gain based on three quarters of postprogram wage data. The comparison group included only those ES applicants who were economically disadvantaged, but it was difficult to find a match group. Even after adjustment, the female JTPA participants appeared to be more disadvantaged than the comparison group. The annualized estimates of net gains for males ranged from $1436 to $1726, depending on the program. It appears that OJT may have been more successful than classroom training. Women had gains between $632 and $926, with most of the gains coming from increases in time employed and not increases in wages. Gains for men did show a wage effect.

Displaced Workers (Title III).

The General Accounting Office (GAO) recently conducted a review of the services provided to displaced workers under JTPA (GAO, 1987). They estimated that approximately 7 percent of the eligible displaced workers were served by Title III programs between the beginning of JTPA and June of 1986. The vast majority of those receiving services (84 percent) were provided with job counseling and two-thirds were given job search assistance. Only about one-quarter had classroom training and 16 percent were placed in OJT slots. A mere 6 percent received remedial educational services. Title III programs had a high placement rate, with 69 percent of program terminees having jobs at the end of the enrollment period. The average wage rate of $6.61 was lower than previous wages and below the $8.52 average for private sector workers, but above the rates for terminees from other employment and training programs.

The relative success of the JTPA program must be judged against its shortcomings. Although the Department of Labor had not set performance standards for displaced workers programs, about 80 percent of the states did, and most of these were placement standards. These standards may have been a factor in the selection criteria used by service providers, causing them to screen out harder-to-serve applicants. The participants in Title III programs were predominantly white males between the ages of 22 and 44, with at least 12 years of education. When compared with the profile of the typical displaced worker during that time period, it appears that older workers and those with less education were less likely to be served by JTPA than would be expected, given their representation in the population of displaced workers. GAO found this was especially true if the service provider screened entrance into the program. These findings suggest that those individuals who are most in need of assistance have been the ones least likely to receive it under JTPA programs for displaced workers.

SPECIAL PROGRAMS FOR YOUTH

Structuring and evaluating programs for youth has been a more difficult task than for adults. In many cases, the purpose of an employment and training program goes beyond immediate postprogram employment. At the upper end, the expectation is that program intervention will place the youth participants on a different life track leading to further education and training, increasing long-run earnings curves, reducing criminal and other anti-social behavior, and decreasing the incidence of early parenting and long-run welfare dependency. Clearly, for most youths, a work experience program is too limited to have such a large impact on an individual's life. Increasingly, policymakers and policy analysts are pointing to the one program that has been widely judged a success for youth, the Job Corps, as a model for youth programs. The Job Corps was designed as a massive intervention into the lives of high school dropouts. The individuals who enrolled in the Job Corps were taken to residential sites away from what was considered to be a negative urban environment and offered a fairly lengthy curriculum that included both basic skills and occupation-specific training. In addition, participants were provided with counseling and health services and a broad range of other support services. An evaluation of the Job Corps by Mathematica Policy Research, Inc. (Mallar, et al., 1980) indicated that the program not only increased employment and income,[2] but resulted in youths seeking more education and training, being more likely to enroll in the military, and being less likely to engage in criminal activity or be dependent on welfare.

These findings, in combination with some concerns about the ability of JTPA, as originally structured, to assist the youths most in need of help, led to the development of several programs that combine JTPA activities with additional services. Two programs that are currently in place are the Summer Training and Education Program (STEP) and JOBSTART.

STEP is a program that was developed as a demonstration by Public/Private Ventures of Philadelphia (Sipe, et al., 1988). The program was introduced as a demonstration at five sites (Boston, Fresno, San Diego, Seattle, and Portland) in 1985. Participants in the program, which combines a government-subsidized summer job with remedial reading and mathematics and life skills instruction, are 14 and 15 year olds who are eligible for the Summer Youth Employment and Training Program (SYETP) under JTPA Title IIb. Youths who are targeted for the program are low achievers who are high dropout risks but who are still enrolled in school.

The STEP program consists of two summers of work experience and classroom activities and support services during the intervening school year. The program evaluation used SYETP enrollees as a comparison group and the gains that were measured included 1) net math and reading gains for the first summer; 2) retention in school the following year; 3) gains in math and reading during the second summer; 4) changes in sexual and contraceptive behavior. In the four years of the demonstration, approximately 4500 individuals have been followed and postprogram evaluation will continue until 1992.

The rationale for the program was based on findings that jobs alone (as was tried under YEDPA) were not sufficient to prevent at risk students from dropping out of school. Instead, stronger interventions that improved basic skills and changed behavior were needed (Berlin and Sum, 1988). In-program and postprogram data indicate that the program does have modest impacts on basic skills. STEP participants had significant net gains in reading and math during the first summer. While the control group lost skills over the course of the summer, program participants in 1987 gained and the difference between the two groups was 0.5 years for reading and 0.6 years for math. The impact of the life skills course was less apparent the first summer. While their knowledge of contraception increased, not all program cohorts had increased the use of contraception and few changes in sexual behavior were reported. During the school year, modest impacts were seen for individuals who had strong support services. Second summer gains were also recorded for reading and math, but only two cities followed the control group, so the net impacts are not clear.

JOBSTART is another program that combines regular JTPA programs with additional activities, including both education and skills training (Auspos, 1987). The program, which is being evaluated by the Manpower Demonstration Research Corporation, began in August 1985 and includes 16 sites, 13 demonstration sites and three nonresidential Job Corps programs. Participants in this program are high school dropouts who would not normally be recruited for JTPA since they were reading below the 8th grade level. The emphasis is on longer term, more intensive training than the JTPA system usually provides.

Individuals were enrolled in JOBSTART on a random assignment basis so the control group would be comparable on most dimensions and sample selection bias would be eliminated. Enrollees received basic education and occupational training over an average of six months, either sequentially or concurrently (Auspos, et al., 1989). In addition support services and life skills courses were available at some sites. Individuals in sequential programs received more basic education, but significantly less occupational training. On average individuals participated in the program activities for over 400 hours. Young mothers were the only group that had significantly lower hours of participation. Those who did receive training were most likely to be in moderate skill level programs. The interim followup findings indicate that all subgroups had positive outcomes, with the treatment group being more likely to receive GED certificates, but less likely to be employed than the control group. However, since most were in JOBSTART for much of the time between enrollment and the followup interview, this is not unexpected.

POLICY ISSUES

This brief summary of recent experiences with government-subsidized employment and training programs reveals that many of the programs have had positive effects, but the effects have been quite modest. Evidence also exists to indicate that the more effective programs for youths and for adults with serious labor market problems are the more expensive ones.[3] In general the programs have served only a small proportion of the eligible population. Under JTPA, estimates of the percent of the eligible population served has ranged from 5 to 13 percent. Moreover, under JTPA, some of the most disadvantaged--older workers, high school dropouts, etc.--have not been served at rates proportionate to their representation in the eligible population. While some findings indicate that JTPA has had positive outcomes for those who need low intensity services, the regular JTPA programs have not done very well at achieving the objective of reaching the hardest to serve. Evidence from demonstration projects such as JOBSTART indicate that the system can, in fact, be adapted to meet this goal.[4]

These findings suggest several important policy questions:

1. Given that past programs have been able to serve only a small proportion of the population, should future programs:
    a) continue to have the same mix of activities with more funds and more participants?
    b) change the mix of programs to serve fewer participants more intensively or more participants less intensively.
2. Should more attention be paid to the assignment of individuals to specific program activities, to ensure that individuals get the most appropriate service and does doing this infringe on the participants' choices in an unreasonable way?

Answering these questions within the current budgetary climate will not be easy.

NOTES

1. One problem that frequently arises with the use of comparison groups is that members of the comparison group have, in fact, received the treatment but they are not identified as such.

2. The only group that did not have significant increases in income was women with children.

3. These findings are supported by findings from demonstration projects such as the National Supported Work Demonstration and work-welfare demonstrations conducted by the Manpower Demonstration Research Corporation.

4. Several program models in the work/welfare system show that JTPA is also playing a large role in delivering services to welfare recipients. See Burbridge and Nightingale, 1989.

APPENDIX

Summary of Selected Evaluations of CETA

Source: Burt S. Barnow, 1987

Table 1
Summary of Estimated CETA Impacts on Earnings

	Westat (1981) FY 76	Westat (1984) FY 76	Westat (1984) FY 77	Bassi (1983)	Bassi et al. (1984) Nonwelfare Disadvantaged Adults	Bassi et al. (1984) Welfare	Bassi et al. (1984) Youth	Bloom & McLaughlin (1982)	DJW (1984) Adults	DJW (1984) Youth	Geraci (1984)
OVERALL	+	0	+ +	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
White women	+ +	+	+ +	+ +	+ +	+ +	0	n.a.	n.a.	n.a.	n.a.
White men	+	0	+ +	n.a.	0	+ +	− −	n.a.	n.a.	n.a.	n.a.
Minority women	+ +	+	+ +	+ +	+ +	+ +	0	n.a.	n.a.	n.a.	n.a.
Minority men	+	0	+ +	0	+	0	− −	n.a.	n.a.	n.a.	n.a.
Women	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0	0	n.a.
Men	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	− −	− −	n.a.
PSE	+	0	+ +	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
White women	+ +	n.a.	n.a.	+ +	+ + +	+ + +	+ +	n.a.	n.a.	n.a.	n.a.
White men	0	n.a.	n.a.	n.a.	+	+ + +	0	n.a.	n.a.	n.a.	n.a.
Minority women	+ +	n.a.	n.a.	0	0	0	−	n.a.	n.a.	n.a.	n.a.
Minority men	0	n.a.	n.a.	0	0	0	−	n.a.	n.a.	n.a.	n.a.
Women	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	+	0	+ + +
Men	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	− −	−	−
WE	0	−	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
White women	0	n.a.	n.a.	−	+ +	+ +	−	+ + +	n.a.	n.a.	n.a.
White men	−	n.a.	n.a.	n.a.	+	+	− −	−	n.a.	n.a.	n.a.
Minority women	+	n.a.	n.a.	+ +	+	+ +	−	+ +	n.a.	n.a.	n.a.
Minority men	0	n.a.	n.a.	−	+	0	− −	+	n.a.	n.a.	n.a.
Women	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	+ + +	− −	0	+
Men	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0	− −	− − −	− −
CT	+	+	+ +	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
White women	+ +	n.a.	n.a.	0	+	+	−	+ + +	n.a.	n.a.	n.a.
White men	+	n.a.	n.a.	n.a.	− −	−	− −	+	n.a.	n.a.	n.a.
Minority women	+ +	n.a.	n.a.	+ +	+	+	−	+ + +	n.a.	n.a.	n.a.
Minority men	+ + +	n.a.	n.a.	+ +	0	−	− −	+	n.a.	n.a.	n.a.
Women	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	+ + +	0	0	+ + +
Men	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	+	−	− −	+
OJT	+ +	+ +	+ + +	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
White women	+ +	n.a.	n.a.	+	+ +	+	0	+ + +	n.a.	n.a.	n.a.
White men	+ +	n.a.	n.a.	n.a.	+ +	+ + +	+	−	n.a.	n.a.	n.a.
Minority women	+ + +	n.a.	n.a.	+ + +	+	+ +	+ +	+ +	n.a.	n.a.	n.a.
Minority men	+ + +	n.a.	n.a.	+ + +	+ +	+ +	0	+ + +	n.a.	n.a.	n.a.
Women	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	+ +	0	+ +	+ +
Men	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	+	−	−	+ +
MUL	+	+ +	+ + +	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
White women	+	n.a.	n.a.	+ +	+ +	+ + +	+ +	n.a.	n.a.	n.a.	n.a.
White men	0	n.a.	n.a.	n.a.	+ +	+ + +	− −	n.a.	n.a.	n.a.	n.a.
Minority women	+ + +	n.a.	n.a.	+ + +	+ +	+ +	−	n.a.	n.a.	n.a.	n.a.
Minority men	−	n.a.	n.a.	− − −	0	+ + +	−	n.a.	n.a.	n.a.	n.a.
Women	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Men	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Coding scheme:					
− − −	Less than −$1,000	+ + +	Greater than $1,000	0	Between −$199 and $199
− −	Between −$500 and −$999	+ +	Between $500 and $999		
−	Between −$200 and −$499	+	Between $200 and $499		

PSE = Public Service Employment, WE = Work Experience, CT = Classroom Training, OJT = On-the-Job Training, MUL = Multiple Activities.

See Table 2 for description of the studies and Table 3 for dollar amounts. DJW is Dickinson, John, and West (1984).

Table 2
Summary of Studies Reviewed

	Westat (1981)	Westat (1984)	Bassi (1983)	Bassi et al. (1984)	Bloom & McLaughlin (1982)	Dickinson, Johnson, and West (1984)	Geraci (1984)
Program entry	7/75–6/76	7/75–6/76 (A) 7/76–6/77 (B)	7/75–6/76	7/76–9/77	1/75–6/76	1/76–12/76	7/75–7/76
Postprogram period	1977	1977 (A) 1978 (B)	1977, 1978	1978, 1979	1976, 1977, 1978	1978	1977–1979 average
CETA participants included in analysis	Ages 14–60 Enrolled in CT, PSE, OJT, WE or MUL Over 7 days in program Prior year earnings less than $20,000 Prior year family income less than $30,000 Terminated from program by 12/76 Valid SSA match on 3 of 5 criteria	Same as Westat (1981) except family income excludes participant's earnings	Same as Westat	Welfare recipients and others economically disadvantaged ages 18–65, youth ages 13–22 No other restrictions	Ages 25 to 60 Enrolled in CT, OJT, or WE only Over 7 days in program	Ages 16–64 Not in summer youth program Complete or close SSA match Not in program in 1978	Same as Westat (1984 except over age 22)
CPS individuals eligible for comparison group	Same age, earnings, income and SSA match In labor force 3/76 or worked in 1975	Same as Westat (1981)	Same as Westat (1981)	For ages 18–65, on welfare or economically disadvantaged For youths 13–22, used Westat (B)	Ages 25 to 60 Earned less than SSA maximum from 1970–75 1975 family income less than $30,000	Adults in labor force in 3/76 Youth in labor force in 3/76 or who worked in 1975	Same as Westat (A)
Matching procedure	Cell matching for 1972–74 earnings groups • For low earners: Exact match on sex, race, and age. Collapsing permitted on education, family income, labor force experience, family head status, 1975 SSA earnings, change in SSA earnings 74–75, change in SSA earnings 73–74, poverty status, private sector employment. • For intermediate earners: Exact match on sex, race, 1975 SSA earnings, change in SSA	Cell matching for each activity. Exact match on sex, 1975 SSA earnings (for A) or 1976 SSA earnings (for B), change in SSA earnings for two prevoius years (1973–74 and 74–75 or 74–75 and 75–76), and race. Collapsing permitted for match on age, education, family income, prior year labor force experience, family head status, and poverty status.	Same as Westat (1981)	All economically disadvantaged and welfare recipients 18–65 included in adult study For youth 13–22, used Westat (1981) youth match groups	All CPS individuals who met the above criteria were included	Weighted nearest-neighbor match based on SSA earnings in 1970–75, square of 1975 SSA earnings, black, Hispanic, other minority, age, age^2, age^3, family head status, 7 occupational categories, public sector employment, poverty status, AFDC recipient, UI recipient, percent of time worked in 1975, percent of time worked in 1974, CPS re-	Same as Westat (A)

Table 2 *(Continued)*

	Westat (1981)	Westat (1984)	Bassi (1983)	Bassi et al. (1984)	Bloom & McLaughlin (1982)	Dickinson, Johnson, and West (1984)	Geraci (1984)
	earnings 74–75; collapsing permitted on other variables. • For high earners: Same as intermediate earners except family income given less priority in cell collapsing.					ported earnings for those at SSA maximum, 15 interaction variables Match groups formed overall and by activity	
Regression procedure	Weighted least squares Separate regressions for each race-sex-earnings group	Weighted least squares Separate regressions for each activity	First differences OLS Separate regressions by sex-race status	First differences OLS Separate regressions by race-sex-welfare status	Fixed effects OLS Model with individual time trends and correction for earnings drop for participants	Ordinary least squares Separate regressions by age-sex-activity status	Two-step procedure: (1) Probit for positive earnings (2) Weighted least squares for positive earners separate analyses by sex
Regressors	Family head status, education, prior work in private sector, 1973 SSA earnings, 1974 SSA earnings, proxy for cyclical unemployment, family income, prior labor force status, age, educational disadvantage and status (age 16–18 only), veteran status (males only), presence of children under 6 (females only), presence of children 6–18 (females only)	Same as Westat (1981)	Age, age^2	Age, Age^2	Age, Age^2, education, education^2, family size, minority status, head of household status, current marital status, past marital status, presence of children under 4, presence of children 4–6, presence of children 7–18	Same regressors as used for matching	Age, Age^2, education, marital status, head of household status, economically disadvantage status, minority status, presence of children under 6 (females only), presence of children 6–17 (females only), interaction terms for experience and education

Table 3
Impact Estimates

	Westat (1981) FY 76	Westat (1984) FY 76	Westat (1984) FY 77	Bassi (1983)	Bassi et al. (1984) Nonwelfare Disadvantaged Adults	Bassi et al. (1984) Welfare	Bassi et al. (1984) Youth	Bloom & McLaughlin (1982)	DJW (1984) Adults	DJW (1984) Youth	Geraci (1984)
Overall	300*	129*	596*	—	—	—	—	—	—	—	—
White women	500*	408*	534*	740*–778*	705*–762*	840*–949*	(68)–(23)	—	—	—	—
White men	200	(4)	500*	—	17–136	578–691*	(576)*–(515)*	—	—	—	—
Minority women	600*	336*	762*	426*–671*	779*–810*	659*–703*	(201)–(77)	—	—	—	—
Minority men	200	(104)	658*	117–211	116–369	(273)–69	(758)*–(681)*	—	—	—	—
Women	—	—	—	—	—	—	—	800*–1,300*	13	185	—
Men	—	—	—	—	—	—	—	200	(690)*	(591)*	—
PSE	250*	117	654*	—	—	—	—	—	—	—	—
White women	950*	—	—	614*–701*	1,049*–1,229*	1,558*–1,563*	882*–990*	—	—	—	—
White men	100	—	—	—	302–305	1,218*–1,307*	(180)–(81)	—	—	—	—
Minority women	650*	—	—	259–815*	1,605*–1,623*	1,648*–1,673*	1,125*–1,196*	—	—	—	—
Minority men	(50)	—	—	(213)–(23)	8–161	(32)–274	(396)–(314)	—	—	—	—
Women	—	—	—	—	—	—	—	—	464*	52	1,121*
Men	—	—	—	—	—	—	—	—	(836)*	(403)	(217)
WE	(150)	(234)	490	—	—	—	—	—	—	—	—
White women	50	—	—	(293)–(120)	760*–862*	505–854*	(333)–(315)	1,400*	—	—	—
White men	(450)	—	—	—	56–438	202–724	(1,021)*–(872)*	(300)	—	—	—
Minority women	300	—	—	872*–1,023*	361–400	825*–874*	(320)–(185)	900*	—	—	—
Minority men	0	—	—	(391)–(310)	370–389	(299)–249	(983)*–(912)*	300	—	—	—
Women	—	—	—	—	—	—	—	800*–1,300*	(522)*	(21)	267
Men	—	—	—	—	—	—	—	(100)	(526)*	(1,108)*	(588)*
CT	350*	267*	740*	—	—	—	—	—	—	—	—
White women	550*	—	—	63–205	295–354*	315–451*	(332)*–(288)*	1,300*	—	—	—
White men	400	—	—	—	(543)*–(457)	(440)–(120)	(962)*–(818)*	300	—	—	—
Minority women	500*	—	—	426–633*	245–301	206–369*	(342)*–(247)	1,100*	—	—	—
Minority men	200	—	—	582–773	102–185	(571)–(99)	(872)*–(845)*	300	—	—	—
Women	—	—	—	—	—	—	—	800*–1,400*	0	117	1,201*
Men	—	—	—	—	—	—	—	300	(343)	(565)*	372
OJT	850*	531*	1,091*	—	—	—	—	—	—	—	—
White women	550*	—	—	80–382	701*–724*	190–318	(127)–12	1,200*	—	—	—
White men	750*	—	—	—	616*–756*	995–1,231*	452–463	(200)	—	—	—
Minority women	1,200*	—	—	1,368*–1,549*	223–244	564–587	861*–877*	800*	—	—	—
Minority men	1,150*	—	—	2,053*–2,057*	772*–812*	454–750	(260)–(58)	1,500*	—	—	—
Women	—	—	—	—	—	—	—	700*–1,100*	35	996*	882*
Men	—	—	—	—	—	—	—	300	(363)	(348)	612*

Note: All estimates are in postprogram year dollars except for Bloom & McLaughlin estimates, which are in 1980 dollars. DJW is Dickinson, Johnson, and West (1984). Numbers in parentheses are negative impact estimates. An * indicates that the estimate is statistically significant at the .05 level. PSE = Public Service Employment, WE = Work Experience, CT = Classroom Training, OJT = On-the-Job Training, MUL = Multiple Activities.

Table 3 *(Continued)*

	Westat (1981) FY 76	Westat (1984) FY 76	Westat (1984) FY 77	Bassi (1983)	Bassi et al. (1984) Nonwelfare Disadvantaged Adults	Bassi et al. (1984) Welfare	Bassi et al. (1984) Youth	Bloom & McLaughlin (1982)	DJW (1984) Adults	DJW (1984) Youth	Geraci (1984)
MUL	350	530	1,077*	—	—	—	—	—	—	—	—
White women	450	—	—	433–602	754*–764*	2,459*–2,700*	493–636*	—	—	—	—
White men	150	—	—	—	551–615	1,208–1,553*	(657)–(484)	—	—	—	—
Minority women	1,400*	—	—	1,195*–1,599*	683*–747*	928*–978*	(387)–(315)	—	—	—	—
Minority men	(300)	—	—	(2,171)*–(1,654)*	(43)–137	995–1,147	(472)–(239)	—	—	—	—
Women	—	—	—	—	—	—	—	—	—	—	—
Men	—	—	—	—	—	—	—	—	—	—	—

REFERENCES

Auspos, Patricia with Marilyn Price. Launching JOBSTART. New York: Manpower Demonstration Research Corporation, 1987.

Auspos, Patricia, George Cave, Fred Doolittle, and Gregory Hoerz. Implementing JOBSTART: A Comprehensive Program for School Dropouts Within JTPA. New York: Manpower Demonstration Research Corporation, 1989.

Barnow, Burt S. "Government Training as a Means of Reducing Unemployment," in Rethinking Employment Policy, ed. by D. Lee Bawden and Felicity Skidmore. Washington, D.C.: The Urban Institute, 1989.

Barnow, Burt S. "The Impact of CETA Programs on Earnings." Journal of Human Resources 22 (Spring 1987).

Bassi, Laurie J. "CETA--Did It Work?" Policy Studies Journal (September 1983).

Bassi, Laurie J., Margaret C. Simms, Lynn C. Burbridge and Charles L. Betsey. "Measuring the Effect of CETA on Youth and the Economically Disadvantaged." Final report submitted to the U.S. Department of Labor under Contract No. 20-11-82-19. Washington, D.C.: The Urban Institute, 1984.

Berlin, Gordon and Andrew Sum. Toward a More Perfect Union: Basic Skills, Poor Families, and Our Economic Future. Occasional Paper 3, Ford Foundation Project on Social Welfare and the American Future. New York: The Ford Foundation, 1988.

Bloom, Howard S., and Maureen A. McLaughlin. CETA Training Programs-Do They Work for Adults?" Washington, D.C.: Congressional Budget Office and the National Commission on Employment Policy, 1982.

Bryant, Edward C. and Kalman Rupp, "Evaluating the Impact of CETA on Participant Earnings." Evaluation Review 11(August 1987).

Burbridge, Lynn C. "Black Women in Employment and Training Programs," in Slipping Through the Cracks: The Status of Black Women ed. by Margaret C. Simms and Julianne M. Malveaux. (New Brunswick, N.J.: Transaction Books, 1986)

Burbridge, Lynn C. and Demetra S. Nightingale. "Local Coordination of Employment and Training Services to Welfare Recipients." Urban Institute research paper, May 1989.

Denison, Edward F. Accounting for Slower Economic Growth. Washington, D.C.: The Brookings Institution, 1979.

Ginsburg, Eli (ed). Employing the Unemployed. New York: Basic Books, 1980).

Hanna, James S. and Zina Turney. "The Net Impact of the Nevada JTPA Title II Program." Nevada Employment Security Department, 1988.

Harper, Harriett. "Black Women and the Job Training Partnership Act," in Slipping Through the Cracks: The Status of Black Women ed. by Margaret C. Simms and Julianne M. Malveaux. (New Brunswick, N.J.: Transaction Books, 1986).

Heckman, James J., V. Joseph Hotz, and Marcelo Dabos. "Do We Need Experimental Data to Evaluate the Impact of Manpower Training on Earnings?" Evaluation Review 11(August 1987).

Indiana Office of Occupational Development. "The Return on Investment from Indiana's Training Programs Funded Through the Job Training Partnership Act." Indianapolis: State of Indiana, 1986.

LaLonde, Robert and Rebecca Maynard. "How Precise Are Evaluations of Employment and Training Programs: Evidence from a Field Experiment." Evaluation Review 11(August 1987).

Levitan, Sar A. and Frank Gallo. A Second Chance: Training for Jobs. Kalamazoo, Michigan: The W.E. Upjohn Institute for Employment Research, 1988.

Mallar, Charles S. Jr., et al. The Lasting Impacts of Job Corps Participation. Princeton, New Jersey: Mathematica Policy Research, Inc., 1980.

Nightingale, Demetra Smith. "Federal Employment and Training Policy Changes During the Reagan Administration." Changing Domestic Priorities discussion paper. Washington, D.C.: The Urban Institute, 1985.

Nightingale, Demetra Smith and Lynn C. Burbridge. "The Status of Work/Welfare Programs in 1986: Implications for Welfare Reform." Project report. Washington, D.C.: The Urban Institute, 1987.

Orfield, Gary and Helene Slessarev. Job Training Under the New Federalism. Chicago, Illinois: University of Chicago Press, 1986.

Sandell, Steven H. and Kalman Rupp. "Who Is Served in JTPA Programs: Patterns of Participation and Intergroup Equity." Washington, D.C.: National Commission for Employment Policy, 1988.

Simms, Margaret C. "Black Participation in the Post-World War II Economy." Discussion paper prepared for the Committee on Policy for Racial Justice of the Joint Center for Political Studies, April 1986.

Simms, Margaret C. "The Participation of Young Women in Employment and Training Programs." *Youth Employment and Training Programs: The YEDPA Years*. Washington, D.C.: National Academy Press, 1985.

Sipe, Cynthia L., Jean Baldwin Grossman, and Julita A. Milliner. *Summer Training and Education Program (STEP): A Report on the 1987 Experience*. Philadelphia, Pennsylvania: Public/Private Ventures, 1988.

Stromsdorfer, Ernst W. "Economic Evaluation of the Comprehensive Employment and Training Act: An Overview of Recent Findings and Advances in Evaluation Methods." *Evaluation Review* 11(August 1987).

U.S. General Accounting Office. *Dislocated Workers: Local Programs and Outcomes Under the Job Training Partnership Act*. GAO/HRD-87-41. Washington, D.C.: General Accounting Office, 1987.

U.S. Department of Labor, Office of the Inspector General. "Audit of JTPA Participant Training and Services: Report I-Participant Training and Employment." Report No. 06-86-801-03-340. Washington, D.C.: U.S. Department of Labor, 1988.

The Urban Institute. *A Compendium of Selected Employment and Training Services for Food Stamp Applicants and Recipients*. Washington, D.C.: The Urban Institute, 1986.

11. BLACK MALE YOUTH: THEIR EMPLOYMENT PROBLEMS AND TRAINING PROGRAMS

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11. BLACK MALE YOUTH: THEIR EMPLOYMENT PROBLEMS AND TRAINING PROGRAMS

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THE OVERALL CHARACTER OF RESEARCH ON EMPLOYMENT AND TRAINING FOR BLACK YOUTH

We have had unusually deep and thorough analysis of the character of black youth employment problems for the period through 1980. This is the result of efforts largely spurred by the Department of Labor in the late 1970s and the early 1980s leading up to and contemporaneous with the Youth Employment Demonstrations Projects Act. The data for 1980 and changes from the 1970s to the 1980s have been carefully analyzed particularly through the use of the 1980 Census public use files. In the last few years there has been considerably less systematic research on black youth employment problems and that which has been carried out has for the most part continued to exploit the rich detail provided by the 1980 Census data. Thus, most of our discussion will focus on the nature of the employment problem for black youth as it emerged over the 1970 to 80 period.

A similar but slightly different pattern is found in the research on the effects of employment and training programs. There was a high level of demonstration and evaluation activity in the late 1970s and early 1980s but then a very sharp drop off in the period 1982 to 1985 followed by a slow recovery over the last three years. Thus most of the evidence we review will come from efforts up to 1981. The information on the new demonstration and evaluation activities is just beginning to emerge so that for the most part firm conclusions cannot yet be drawn on the basis of this experience, though we do report on its current status.

There are two important features of the post 1980 developments which might lead one to question the applicability of findings drawn from the pre-1980 experience. First, the age distribution of the population is shifting rapidly: whereas in the 1970s we were experiencing rapid growth in size of the youth population, the sharp decline in the absolute size of the youth population began in 1980 and will continue almost to the year 2000. Thus there maybe a reversal of the situation in the 1970s when the problem was to absorb sharply increasing numbers of youth in the labor market to one in which there is a concern about inadequate supply of young workers. Second, there has been increasing attention paid to the changing structure of the U.S. economy, with manufacturing employment becoming an increasingly smaller proportion of total employment and the argument by some that this general structural change is accompanied by changes in technology which will escalate the level of skills necessary for sustained employment.

While we will touch on these developments where there appears to be relevant information, we believe the assessment of the arguments over these major developments and their relevance to labor force quality are best addressed in other papers prepared for the Commission.

A PREVIEW OF POLICY RECOMMENDATIONS

In this section I summarize the major policy recommendations so that the reader may bear them in mind in reviewing the full material in the paper. A somewhat more extended justification of the recommendations is presented at the end of the paper.

In spite of the long, continued recovery of the U.S. economy from its major post World War II recession in 1982-83, the employment problems of black males remain substantial. The unemployment rate for black males is 2.3 times that of white males, even in this relatively tight labor market situation. An even more meaningful statistic is the employment-to-population ratio which for all black males in 1988 still had not returned to the level that it had in 1979, which in turn was substantially below the level it had in the 1960s and early 1970s.

The employment problems of black youth are particularly serious. Less than one-third of black males 16-19 were employed in 1988, and their employment-to-population ratio was still below the level it was in 1979, which was itself substantially below the levels of employment-to-population ratio for the 1960s and early 1970s for this group. Thus, it remains important to pursue the question of how employment and training policies can address the problems of employment for black males, and for black male youths in particular.

1. The Importance of Macro Policies for Black Employment

In considering the employment problems of blacks and what government policies and programs might do most to alleviate those problems it must be emphasized that the most important policies affecting the employment of black males are monetary and fiscal policies which influence the general state of the economy and the tightness of labor markets. No employment and training policies can come close to providing the improvement in employment of black males that sustained low unemployment rates throughout the economy provide.

2. The Process of Employment and Training Policy Development

Careful consideration should be given to the process by which employment and training programs and policies are developed. After over 20 years of federal employment and training programs we know very little about "what works for whom." A process which assures a careful sequence of research, pilot project with rigorous evaluation, replication more broadly with rigorous evaluation and final formulation and implementation as a national program or policy is critically important if we are to stand a chance to learn from our experience with these programs. This process will not happen unless Commissions like the Secretary's Commission on Workforce Quality and Labor Market Efficiency strongly call for it.

3. Employment Problems of Black Inner City Youth.

The employment problems of blacks, and of youth in general, are particularly concentrated among those males who have dropped out of high school and live in the inner city. The major question is what role the training system can play in ameliorating the problems of this group.

a. Current Programs and Pilot Programs Deserving Support

It is useful to separate recommendations according to those appropriate for in-school youth and those for out-of-school youth.

i. For in-school, the Summer Training and Education Program (STEP) is a combination of summer employment and educational remediation based on the finding that at-risk youth appear to fall behind their more advantaged classmates largely through major losses in academic skills during the summer months. This project is being tested on a pilot basis with a rigorous evaluation with only some early results currently available. A major replication and expansion of STEP is currently underway and this effort deserves support. However, there is no rigorous evaluation planned for the replication projects. It is critically important that a strong evaluation component be added to the replication-expansion of STEP since the long term effects of the program have still not been established in the pilot project and program adjustments could be required.

A closely related aspect is the recently legislatively mandated requirement that the long-standing Summer Youth Employment Program (Title IIB) increase the degree of educational remediation provided at most program sites. There appear to be no plans to evaluate the effects of this increased remediation. The Department of Labor should be urged to evaluate rigorously the effects of increased educational remediation in the Summer Youth Employment program.

ii. For out-of-school youth, the Job Corps is a long standing program of proven effectiveness it should be maintained and expanded. However, the Job Corps is a complex program with many components and it is not known which are most important in determining its effectiveness with the severely disadvantaged youth it serves. The fact that Jobs Corps is residential adds considerably to its costs but whether that is a crucial factor is unknown. A new pilot project, Job Start, attempts to test whether skills training and remediation of the sort provided by the Job Corps can be effectively provided in an urban, non-residential setting for dropouts and other out-of-school low income youth. The continuation of the Job Start project and its rigorous evaluation deserves support and careful attention to its results would influence the shape of any future program effort in this domain.

b. A New Pilot Project Needed

Research has shown that those youth who work during school years do better in the labor force after leaving school. Further, during the 1970s a major gap developed between the level of in-school employment of whites and the level of in-school employment of blacks. An important question is whether increasing the in-school employment levels of blacks toward that of whites would lead to reductions in the black-white post-school employment differences. A major demonstration program from 1979 to 1981, the Youth Incentive Entitlement Pilot Project, provided some information on the feasibility of assuring employment to low income in-school youth so that the black/white gap narrowed but the termination of the project and the character of the research made it impossible to tell what the long term effects of the increased employment would be. A new pilot project, with a rigorous evaluation, should be mounted to seek to determine whether employment of youth while still in school can be increased, e.g., through wage subsidies, and what its long term effects would be.

c. Research Needed

There are several issues relating to inner city dropouts which require more basic research.

i. We hear a great deal about the drug and crime problems of the inner city. Recently, we heard a good deal about the attractiveness of the drug trade for inner city youth as a means of quick and substantial income and the argument that it is hard to get such youth to take education, training and regular employment seriously given the drug and crime alternatives. I know of no systematic information on the extent of involvement in drugs and crimes for the broad group of low income black youth in the inner city. I believe it is a high priority to attempt to get such information on a systematic basis if we are to be better able to understand how education and training programs may compete with these alternatives.

ii. The employment and training system is trying to deal with those youths for whom the education system has failed. We often try to target programs to assure that those most at risk have greatest access to those programs. Yet the targeting itself tends to create the image of these programs as programs for losers. It is often felt that participants in the programs are stigmatized as losers by participation itself. Thus, recruitment of inner city youths is often difficult. In addition, efforts to involve the school system in youth employment and training programs have generally been a failure. These complex issues of the relationship between the schools and the employment and training system and the related problems of targeting of programs require some broad and deep consideration. A study of how the employment and training system can be better related to the educational system is much needed.

iii. The Spatial Mismatch Problem

There is increasing research evidence which suggests that a substantial portion of the employment problems of black inner city youth may be related to the process of suburbanization of jobs, at least in the major northeastern cities. In the 1970s for several cities well paying jobs moved in substantial numbers to the suburban fringe and blacks had difficulty following them, perhaps due to residential segregation. But the research on this issue is still incomplete and controversial. The Department of Labor should support research to further investigate the extent and nature of the spatial mismatch of jobs and inner city low income persons.

If this phenomenon proves indeed important, even for only a portion of the country, efforts should be made to develop and test programs which would facilitate access of inner city youth (and adults) to these suburban fringe jobs. Such efforts might involve attempts to deal with residential segregation, special transportation arrangements, enhancement of job search efforts and during-employment support services for inner city youth, attempts to stimulate suburban business to develop inner city school connections.

iv. The Skills Mismatch and Literacy Issues

Increasingly concerns have been expressed about the skill level of the American labor force, as the Commission is well aware. International competition and the escalation of technology are said to be likely to be raising the skill levels required while at the same time those population groups with the lowest academic performance are becoming an increasing proportion of new workers; a skills mismatch may emerge.

While the literacy problems of the population and the related issue of the potential skills mismatch are widely quoted as creating an imperative for new education and training initiatives, I believe the evidentiary basis for these hypotheses is extremely weak. My concern is that substantial resources may, in the name of these problems, be misdirected and do little to improve the employment circumstances of black males, and even in some cases to worsen them. Therefore, rather than simply accepting sweeping conclusions about the levels of literacy required for productive employment over the next 20 to 50 years, more systematic investigation should be undertaken to better determine the factors which are likely to influence the changing requirements of jobs over the next decade and their relationships to the education and training needed in the labor force.

Pursuing these issues further and more concretely, there is a debate underway as to how best to accomplish remedial education in the context of training programs: some urge that education must precede skills training (referred to as the sequential approach), others that remedial education elements can and should be built into the skills training program (referred to as the concurrent approach). Attention should be paid to systematic study of the effectiveness of concurrent as opposed to sequential remedial education and skills training for disadvantaged persons.

In addition, while it is been shown that higher test scores or attainment of high school degrees or GEDs will result in better labor market experience for those with the improvements, there is little evidence regarding the effects of changes in these measures which are induced by a training program. Evidence needs to be gathered about whether changes in test scores or GED qualifications induced by a program do in fact lead to better labor market experience post program. This sort of information will help us to decide how much emphasis should be put on this aspect of programs.

While there is increased discussion of literacy requirements there is some evidence that literacy tests have been a factor in screening some of those most in need, e.g., black inner city males, out of JTPA programs. Thus, the emphasis on literacy may have inadvertently led to a worsening of the skill training opportunities for black males (and other disadvantaged). This is one form of the more general problem of the incentives in JTPA which lead to "creaming." I understand the general problem is currently being addressed in the context of amendments to JTPA legislation, but particular attention needs to be paid to the role of test use and test criteria for program entry into JTPA and other employment and training programs.

Of course one is in favor of efforts to improve the literacy and skills of the disadvantaged. My concern, however, is that programs and policies promulgated in the name of required literacy improvements may become misdirected, and grandiose in ways irrelevant to the employment opportunities of the disadvantaged in general and the inner city black male in particular.

I. THE BLACK YOUTH EMPLOYMENT PROBLEM: ITS NATURE AND DIMENSIONS[1]

Unemployment Rates

The United States recently experienced its most serious unemployment problems since the Great Depression of the 1930s. In the depths of this recession, in December 1982, the overall unemployment rate reached a postwar high of 10.8 percent. But the unemployment rate for teenagers was 24.5 percent--more than twice the overall rate--and the unemployment rate for black teenagers was 49.5 percent. Since the trough of the recession, the national employment situation has improved markedly so that during 1988 the unemployment rate averaged 5.5 percent. The rate for teenagers (16-19) was still substantially higher--15.3 percent--and the rate for black teenagers had improved, to 32.4 percent.

The youth employment problem is not due merely to the greater vulnerability of young workers to the swings of the business cycle. There has been a long-term upward trend in youth unemployment rates over the last several decades (Congressional Budget Office, 1982). Table I.1 provides statistics for four periods from 1957 to 1988: 1957, 1964 and 1978 were chosen because they were years of relatively high economic activity and had identical unemployment rates for adult white men aged 35-44, 1984 was a point part way out of the recovery from the major recession and 1988 gives the latest data.

Over the period spanned by these statistics, the unemployment rate for all youths climbed steadily. In addition, the gap between white and nonwhite youths that was evident in 1957 became much larger over these decades. Thus, even among the more "settled" 20- to 24-year-old youths, the 1957 unemployment rate for white males was 7.1 percent while the rate for nonwhites was 12.7 percent; by 1984, this gap had expanded to 9.8 percent for whites vs. 24.5 for nonwhites.

Further, in all three age subgroups of youth, the unemployment rate of blacks grew relative to those of whites between 1957 and 1978. Since 1978 the relative position of blacks have improved somewhat but remains considerably worse than it was in the 1950s and 60s.

These continuing trends in the relative unemployment rates of young Americans were a primary motivation for the launching in the late 1970s of federally funded programs designed to provide employment and training services to disadvantaged youths. Yet, as the last column of Table I.1a indicates, the gap between white and nonwhite unemployment rates has persisted: in 1988 unemployment among white youths aged 20-24 was 7.4 percent for white males; for nonwhite males the rates were 17.4 percent.

While the unemployment rates shown in Table I.1 demonstrate that young people's problems have been increasing, the unemployment rate can sometimes be a misleading indicator, particularly when applied to the youngest segment of the labor force.[2] Therefore in what follows we concentrate on the employment-to-population ratio.

Table I.1a Youth Unemployment Rates in the Civilian Population for Selected Years (in percentages)

			Year		
Group	1957	1964	1978	1984	1988
Adult white males					
35-44 years old	2.5	2.5	2.5	4.6	3.4
All youths					
16-17 years old	12.5	17.8	19.3	21.2	17.4
18-19 years old	10.9	14.9	14.2	17.4	13.8
20-24 years old	7.1	8.3	9.6	11.5	8.7
White males					
16-17 years old	11.9	16.1	16.9	19.7	16.1
18-19 years old	11.2	13.4	10.8	15.0	12.4
20-24 years old	7.1	7.4	7.7	9.8	7.4
Nonwhite males					
16-17 years old	16.3	25.9	39.8	39.8	31.9
18-19 years old	20.0	23.1	30.7	38.5	27.6
20-24 years old	12.7	12.6	20.0	24.5	17.4
White females					
16-17 years old	11.9	17.1	17.1	17.8	14.4
18-19 years old	7.9	13.2	12.4	13.6	10.8
20-24 years old	5.1	7.1	8.3	8.8	6.7
Nonwhite females					
16-17 years old	18.3	36.5	41.5	42.2	32.2
18-19 years old	21.3	29.2	36.3	36.6	26.3
20-24 years old	12.2	18.3	21.3	23.5	17.9

SOURCE: Data from U.S. Department of Labor (1982, 1985b).[3]

Employment-to-Population Ratios

In Table I.2 the civilian employment-to-population ratios are reported for various subgroups of the population.

Looking at this table the first thing we note is that in every period the employment-to-population ratio is considerably lower for youth than it is for adult White males. We know that during this period some youth continue to be involved with schooling and, for those not in school, this is often a period of transition, of searching for an appropriate type of occupation. So it should not surprise us that the

Table I.2 Civilian employment-to-population rates for selected groups (in percentages)

Group	Year 1957	1964	1978	1984	1988
Adult White males					
35-44 years	95.6	95.1	93.9	91.6	92.2
All youths					
16-19 years	43.9	37.3	48.5	43.7	46.8
20-24 years	59.5	60.9	69.6	68.7	71.8
White males					
16-19 years	52.4	45.0	56.3	49.0	51.7
20-24 years	80.5	79.3	76.0	78.0	80.1
Non-White males					
16-19 years	48.0	37.8	29.8	25.2	29.4
20-24 years	78.27	8.1	61.1	58.3	63.9
White females					
16-19 years	38.3	32.2	48.7	47.0	50.2
20-24 years	43.4	45.3	60.6	66.1	69.8
Non-White females					
16-19 years	26.5	21.8	23.5	21.8	25.8
20-24 years	40.9	43.7	45.4	46.3	50.6

SOURCE: Data from U.S. Department of Labor (1979, 1980a, 1985b, 1989); Bureau of Labor Statistics (1983).[4]

employment-to-population rates are somewhat lower among youth than among White males.

The second thing to note in this table is that (looking at the row involving all youth) the employment situation improved over the period from 1957 to 1978 for both 16 to 19-year-olds and for the 20 to 24-year-olds. It appears, using the employment-to-population ratio, that the employment situation for younger persons in the United States was improving over this 20-year period.

When one looks, however, at subgroups within the youth population, a starkly different picture emerges. For White males 16 to 19 years old, the employment situation improved substantially. For 20 to 24-

year-olds, it deteriorated slightly. Turning to non-White males, however, it is found that in 1957 in both age groups they had employment-to-population ratios just a few percentage points below those of White males. But by 1978 the employment-to-population ratio had fallen by nearly 20 percentage points for non-White 16 to 19 year-olds, while it had increased by 4 percentage points for Whites. Among the 20 to 24-year-olds it declined by 17 percentage points for non-Whites while only declining by 4 percentage points for Whites.

This table brings out the central theme about the nature of the youth employment problem in the United States in the 1970s: there was a substantial increase in disparity between Whites and non-Whites in the youth population in their chances of finding employment.

Any discussion of employment-to-population rates runs the risk of confusing trends in school attendance with trends in employment. In the present case, this is a particularly worrisome possibility. While the employment rate for non-white youths has declined over the last 3 decades, the school enrollment rate for non-white youths has increased during these same decades. The rate of high school completion among black men and women aged 25-29 rose from 47.7 percent in 1960 to 65.4 percent in 1970 and to 79.4 percent in 1983.

The employment patterns of youths who are enrolled in school are, of course, considerably different from those who are out of school. Table I.3 provides a breakdown by school enrollment of the employment rates for 1964, 1978, 1981, and 1988 for all youths aged 16-24.[5] As one would expect, in-school youths are less likely to be employed than out-of-school youths. However, there are significant differences in these rates over time for different groups. For white males, the employment rates increased for in-school youths from 34.0 percent in 1964 to 46.9 percent in 1978, declined somewhat in 1981 and recovered by 1988, while the rate for out-of-school youths was stable at approximately 87 percent between 1964 and 1978 and then declined slightly during the economic downturn in 1981 and recovered only slightly by 1988. In contrast, the employment rates of black males have shown a marked decline for both in-school and out-of-school youths: the rate for those out of school was 80.5 percent in 1964, 67.8 in 1978, and 57.8 in 1981, recovering only slightly in 1988; the rate for those in school dropped from 30 percent in 1964 to 20 percent in 1978 and was still at 20 percent in 1981, but recovered strongly to 26.2 percent in 1988 (though still below the rate for 1964).

Comparing the data for young males, one finds that in 1964 the employment rates of both in-school and out-of-school black males[6] were roughly 90 percent as large as those of white males. However, by 1981 this gap had widened enormously: in-school black males were less than 50 percent as likely to be employed as white males, and out-of-school black males were only 71 percent as likely to be employed as white males.

The data presented so far clearly point out two major aspects of the development of the youth employment problem from the 1950s to the late 1970s in the United States. The first is the growing disparity between Whites and Blacks and the second is the importance of distinctions according to in-school and out-of-school youth. More

Table I.3 Employment-to-population rates for in-school and out-of-school youth aged 16-24, by sex and race, 1964-88

Group	Year	Employment-to-population rate Out-of-school youth	In-school youth
White males			
	1964	86.7	34.0
	1978	86.9	46.9
	1981	81.1	43.4
	1988	82.0	45.4
Black males			
	1964	80.5	30.0
	1978	67.8	20.3
	1981	57.8	20.1
	1988	61.1	26.2
White females			
	1964	47.3	23.3
	1978	66.2	45.7
	1981	68.3	43.0
	1988	68.8	49.0
Black females			
	1964	48.0	15.4
	1978	46.9	20.6
	1981	43.0	17.2
	1988	47.9	25.0

SOURCE: Bureau of Labor Statistics (1982 Table C42, 1989).

refined analyses of the data indicate that the youth employment problem defined in terms of lower chances of getting a job, lower wages when obtaining a job, higher chances of losing a job, and longer periods of remaining without a job, having lost one, are highly concentrated among minority groups, inter-city, low-income, high-school drop-out youth. For those with these combinations of characteristics the problems are compounded. Thus, for the United States it is not sensible to say that there is a general employment problem, for the majority of youth find jobs upon leaving school relatively readily and when they leave one job find a new one without long periods of unemployment. For the subgroup of minority, inter-city, school drop-outs, however, the problems are substantial and, most disheartening, they have become substantially worse over time.

Wages and Earnings

While many employment problems can be measured in terms of nonemployment of one type or another, a full picture of the youth employment predicament also requires consideration of wages and earnings. Table I.4 presents data on the earnings of male youths aged 24 and under as a percentage of earnings of white males aged 25 and over.

Table I.4 Ratios of the Median Usual Weekly Earnings of Out-of-School Males to Earnings of Male Workers Aged 25 and Older, by Race: 1967-77

	Earnings of Full-time Young White Men/Earnings of Fulltime White Men, Age 25+		Change in Earnings Ratios	Earnings of Full-time Young Non-white Men/Earnings of Fulltime White Men, Age 25+		Change in Earnings Ratios
Age	1967	1977	1967-77	1967	1977	1967-77
16	.38	.34	-.04	.33	.32	-.01
17	.49	.39	-.10	.39	.32	-.07
18	.54	.49	-.05	.44	.44	.00
19	.61	.52	-.09	.42	.43	-.01
20	.66	.58	-.08	.63	.52	-.11
21	.73	.61	-.12	.57	.50	-.07
22	.79	.63	-.16	.59	.54	-.05
23	.81	.71	-.13	.59	.54	-.05
24	.87	.75	-.12	.60	.63	-.03

SOURCE: Data from R. Freeman and J. Medoff in Freeman and Wise op. cit. (1982: Table 3.9).

Two features of these data should be noted. First, over the decade over 1967 to 1977, the earnings of young men relative to those of adult men declined. Second, the extent of the decline was greater for white than non-white youths and, therefore, the earnings of young black men grew relative to those of young white men. Thus, we see both a general deterioration of earnings of young males and a relative increase in earnings (actually a smaller decrease) for young black males compared with young white males. Moreover, when various individual characteristics are controlled, the average wages for young black males are not significantly different from those of young white males.

The observed difference in total earnings is due primarily to the fact that the probability of a young black male with a given set of characteristics obtaining a job is much lower than that of a young white male with similar characteristics.

Developments Since 1980

We noted at the outset that there has been relatively little in depth analysis of the employment problems of black youth since 1980. While we have noted several of the features of the 1988 situation in the tables above, it is useful to review developments since 1980 as a whole.

In 1980 the U.S. economy began its descent into the worst recession that it had experienced since the 1930s. The economy reached its lowest point at the end of 1982 with an overall unemployment rate of 10.8 percent, the highest it had been in the post Second World War period. At that point the unemployment rate for youths aged 16 to 19 was 24.5 percent. As already noted, youth employment is more sensitive to the business cycle than is adult employment, so there can be little question that black youth suffered even more than the rest of the population from this crisis. The important question is whether in the recovery they would, as in the past, experience more than average improvements and what the shape of black youth employment problems would look like when the economy return to close to capacity. Table I.5 provides some information relevant to this question.

Table I.5 Employment-to-population rates for total civilian population and for all civilian youths aged 16-19, 1977-88

Employment-to-population rate

	All civilian workers (1)	All youths aged 16-19 (2)	Ratio (2)/(1)
1977	57.9	46.1	.796
1978	59.3	48.3	.814
1982	57.8	41.5	.718
1984	59.5	43.7	.734
1988	62.2	46.8	.752

Source: U.S. Department of Labor (1985: Table B-12,1989).

For all civilian workers the employment-to-population ratio fell from 1978 to 1982 but by 1984 it had recovered to its 1978 level and by 1988 it had reached an all time high. For youth aged 16-19, the employment-to-population ratio fell more precipitously between 1978 and 1982, by 1984 had recovered less than half of its loss and by 1988 it was still below it 1978 level. The last column of table I.5 presents the ratios of youth employment-to-population in relation to the all-civilian rate. This shows a considerable worsening in the 1980s of the relative position of youth, even through the long economic recovery since 1982. In 1988 this ratio is still below what it was in 1978 indicating that the recovery has not been as strong for youth as it has been for adults.

Even within these tightening labor markets, the problems of high-school drop outs remain high. The gap in employment-to-population between high school graduates and dropouts has grown since the 1970s and the current recovery has done little to narrow it again.[7]

We can also look more closely at the post 1980 relationship of non-white and white youth employment. Table I.6 recasts some of the data from table I.2. showing how the employment-to-population ratio of non-white male youth compares to that of white male youth.

Table I.6 Employment-to-population Ratio of Male Non-whites as a Percent of the Employment-to-population Ratio Male Whites

Year	Age Group 16-19	Age Group 20-24
1964	84	98
1978	52.9	80.4
1984	51.4	74.7
1988	56.8	88.9

SOURCE: Data from U.S. Department of Labor (1982, 1985b).[8]

It can be seen that for both age groups, by 1988 non-white males had gained relative to white males as compared to 1978 but their relative position was still substantially below what it was in 1964. Thus some of the black-white gap in male youth employment rates which had opened up in the 1970s has been reduced, but particularly for 16-19 year olds, a substantial gap remains.

One major factor operating in the post 1980 period that might have been expected to have led to an improvement in the situation is the change in the demographics. The youth population reached its absolute high in 1979 (The 15-19 year old group was 19.8 millon). Projections of the youth population show that it will decline through 1995 in absolute number (15-19 year olds will be about 16 million) and then begin to increase again. One would expect that this decline, in absolute number of youth as well as relative to the adult population, would lead to a significant improvement in the employment situation of youth. However, by 1984, two-thirds of the total projected decline in the size of the youth population had occurred and the figures reviewed in Table I.6 above give no indication that this relative supply effect had a substantial impact on youth employment problems.[9] If the reduction in the relative supply of youth has been having some positive effects, it has not been substantial enough to overcome other negative factors, at least until very recently. The 1988 figures give the first positive signs of youth gaining substantially relative to the rest of the population but they are still not at quite the employment-to-population level they had in 1978 when their cohort size was the greatest.

II. CAUSES AND CONSEQUENCES OF BLACK YOUTH EMPLOYMENT PROBLEMS

The previous section has documented unemployment rates and other measures of employment for youths and differences among blacks and whites, for the past 2 decades. It has also raised a score of questions. What explains the high unemployment rate of youths compared with adults? Why have rates of unemployment been rising? Why has the gap between blacks and whites widened? How do these trends relate to the relative decline in earnings for young full-time workers and the narrowing gap in earnings between young white and black full-time workers?

Researchers typically discuss a number of supply and demand factors that might contribute to continuing high unemployment rates for youths. On the demand side the factors include: poor macroeconomic performance; shifting geographical and industrial distribution of jobs; minimum wage laws and other government interventions in the labor market; discrimination in hiring; and demand for military personnel. On the supply side the factors include: the baby boom bulge and other demographic factors; unrealistic expectations of youths and the "reservation" wage; and mismatched jobs and educational qualifications. We highlight here just a bit of the discussion of these factors as they have appeared in the extensive research on these questions.[10]

Factors Affecting the Demand for Labor

Macroeconomic Conditions

The unemployment rates of youths are more sensitive to macroeconomic conditions than are those of adults. Comprehensive studies of time-series data by the Congressional Budget Office and the Council of Economic Advisors suggest that a 1 percent change in the unemployment rate for adult males is matched by a 1.5 percent change for white youths and a 2.5 percent change for black youths. Freeman[11] has argued and we agree that the employment-to-population ratio is a more reliable indicator of youth activity. In both time-series and cross-sectional data, he finds that a 1 percent change in the total male unemployment rate leads to a 1.7 to 2.4 percent change in the employment-to-population ratio for youths aged 16-19 and a 1.5 to 3.4 percent change for those aged 20-24.[12] Bowers[13] has reviewed the employment experience of blacks, teenagers aged 16-19, and women during all business cycles from 1948 to 1980, and he also concludes that teenagers and blacks, both in the aggregate economy and in key cyclical sectors, suffer a disproportionate share of the decline in employment that occurs during economic recessions.

These, however, are estimates of the cyclical sensitivity of youth and black employment rates. However, when we looked at the data for 1957, 64, 78, and 88 which were all at the peak of cycle we saw this same deterioration so that in addition to the cyclic effects there appears to be a long term trend worsening the situation of black youth relative to white youth and adults. Such data provide only a crude indicator, of course, of the complex relationships that exist between the employment problems of teenagers and the evolution of the macroeconomic situation in the nation. Nonetheless, there appears to be substantial agreement among most researchers that a relatively high level of economic activity is essential for any long-term improvement in the youth employment situation.

Industrial and Geographical Shifts in the Economy

The location of economic activity has changed both in terms of its distribution across different types of industrial sectors and in terms of its geographical location. It is, of course, conceivable that these shifts in industrial composition or geographical location have affected the black-white deferential in youth employment ratios.

The contribution of changing industrial distributions of workers to the relative employment position of blacks and whites appears to have received little systematic study. One unpublished study, Badgett[14] finds that from 1971 to 1987 most of the rise in black unemployment was due to rises in unemployment within sectors and not to movement from sectors of low unemployment to those with high unemployment. This was not because blacks were trapped in declining industries but rather because those sectors in which they were already heavily concentrated, such as retail, had relatively high rates of increase in unemployment even though they were growing sectors. This study did not focus on youth per se, however.

Another possible cause of a downward shift in demand for youths, particularly for blacks, is the movement of jobs from the inner cities to the suburbs and beyond (a move resulting in large part because land and other costs are lower). This has been a matter of some dispute in the economics literature. Leonard[15] has found, for example, that the ratio of black to total employment in any given firm in Los Angeles or Chicago in the 1970s varied inversely with distance from the black ghetto. Over time, the loss of employment in the cities has resulted in an appreciable loss of jobs for blacks who, apparently because of racial discrimination, do not follow the jobs as they move into the suburbs and nonmetropolitan areas. However, this movement of jobs away from where blacks live cannot explain the black/white differential that persists within inner cities. Ellwood, for example, has shown that in Chicago distance from jobs was a weak predictor of employment: for blacks and white youths living in adjacent neighborhoods, black youth employment could be as much as 20 percent lower than white youth employment; similarly, blacks in neighborhoods near jobs were no more likely to be employed than blacks in neighborhoods far away from jobs.

Recently, however, there have been a series of studies utilizing the 1980 Census data that examine effects of the characteristics of the surrounding SMSA on the employment and earnings of black youth.[16] All of the studies find that differences in SMSA characteristics such as levels of overall employment of whites, the size of the black population, the degree of segregation and the average commute to work play a role in the lower employment and earnings of young black males. In most of the studies, had young black males faced the same characteristics on average as young white males the difference in average employment and earnings would have been reduced by 25 to 30 percent. Most directly relevant to the spatial mismatch/segregation hypothesis are those which test the effects of measures of the distance of commute to work on black youth employment and earnings. One of these studies (Ihlanfeldt & Sjoquist) estimate that for Philadelphia this variable alone could account for 33 to 54 percent of the racial differential in employment probability and somewhat less strong results for Chicago and Los Angeles. These recent results suggest that further investigation of the spatial mismatch hypothesis and the role it plays in various cities in affecting the relative black-white youth employment and earnings would be warranted. They also suggest that more careful attention should be paid to difference across different cities in the extent of black-white youth differentials and the configurations of factors that contribute to them.

Discrimination

Discrimination could contribute to youth employment problems in the form of discrimination on the basis of age or on the basis of race or sex. That employers prefer older workers to younger workers seem to be well established. However, whether this preference constitutes discrimination depends on whether there are in fact differences in productivity, costs of training, and turnover associated with younger workers. There have been few attempts to establish such relationships empirically. Discrimination studies have consistently shown black adult workers to have lower earnings than whites after the measured individual characteristics have been controlled for; a large part of this earnings differential is associated with the probability of employment rather than differences in wages.

With respect to wages and earnings (net of weeks worked) and common human capital variables (e.g., education), economists have generally found substantial evidence of discrimination in wages prior to the mid-1960s, but in more recent years the available evidence suggests that discrimination in wage rates by race has been narrowed or effectively ended.[17]

With respect to employment--in contrast to wages--efforts to account for the disparity in unemployment rates between whites and blacks on the basis of standard human capital variables find that about one-half of the gap in unemployment rates between young black and white workers could be accounted for by such variables then, if one followed the convention used in the earnings literature, the residual gap would be attributed to discrimination.

While discrimination may account for differences between blacks and whites at a given point in time, it is more difficult to establish that increases in discrimination in the late 1960s and the 1970s were an important factor in explaining the increasing differential in employment between young blacks and young whites. Most casual impressions are that open discrimination on the basis of race decreased during this period. (However, as noted below other factors may interact with existing discrimination to generate the kind of changes we see over time.)

Factors Affecting the Supply of Labor

Demographic Trends

During the 1970s several demographic trends might have affected youth employment. First, and most prominent, was the entry of the massive baby-boom generation into the labor force. Theory suggests that as the supply of young workers rises relative to the supply of both older workers and other factors of production, youth wages or employment will fall relative to that of older workers. Indeed, in a cross-sectional analysis of standard metropolitan statistical areas, Freeman found that as the youth share of the population increased, employment prospects declined by a moderate amount, particularly for those aged 16-17. However, analysis by Wachter and Kim suggests that, at a national level and over time, the primary effect appears to have been on wages.

For example, as shown in Tables I.2a and I.2b, during the period of rapid expansion of the youth labor force, 1957 to 1978, the employment-to-population rate for white youths stabilized or actually increased. In contrast, Table I.4 shows that during the 1970s the wages of white youths declined relative to adult wages. Whatever the effects of this large demographic bulge, it did not overcome other factors tending to raise the employment-to-population rate for white youths, but it may have played a role in lowering their relative wages. Among black youths, however, the pattern appears different: relative wages over those years declined by less than those of white youths, but unemployment rose and employment rates fell substantially.

Two other factors increased the supply of labor during the same period: the sharp and continuing rise in the labor force participation of adult women and the influx of immigrant workers into the United States. Each of those groups might draw jobs away from youths if they enter the labor market in part-time or low-skill jobs (particularly if employers prefer to discriminate in their favor or can pay lower wages to these groups). It is possible that increased numbers of women in the labor force may have worsened the employment prospects and lowered the wage rates of youths, but several analysts have found it hard to show that there were indeed substantial effects of women's employment on youth employment. Estimating the employment interactions between youths and immigrants has been difficult because of the lack of reliable data on the illegal component of the immigrant work force. However, Freeman and Holzer report that there is no evidence to support the view that increases in the Hispanic population (which accounts for a substantial number of immigrants) have hurt job opportunities for black youths, since black youth unemployment rates are similar in cities with large and small Hispanic populations.

Summing Individual Effects

Thus far we have been serially reviewing possible causes of the trends in youth employment problems within a framework of demand and supply factors. Two sets of researchers[18] have independently sought to bring together most of the factors covered above in a consistent accounting framework in order to see what proportion of the growth in the gap in black/white youth employment rates can be explained by the sum of the individual effects of all the factors. Though their accounting frameworks are quite different, both sets of researchers conclude that they can account for only about 50 percent of the diverging racial employment patterns among youths in the 1970s. Thus we are left with a large part of the problem of black youth employment insufficiently explained (We note, however, that this accounting did not allow for the possible effects of increasing suburbanization of jobs, which, as we noted above, some analysts have recently estimated to have been a rather large factor in some cities).

In discussing each factor separately we have also not touched upon possible (nonadditive) interactions among factors; such interactions might yield results that are different from the simple sum of each individual factor. Two hypothetical examples can illustrate such interactions. It was previously noted that increases in the supply of young workers seem to be related to increases in employment rates and decreases in wages (relative to adults) for young white males, but they seem to be related to sharp decreases in employment rates and smaller relative wage decreases for young black males. These differences might be due to the interaction of the increased supply of labor and the existence of minimum wage rates and increased civil rights enforcement and affirmative action programs. The wages of young black males were already closer to the minimum wage than were those of young whites, so when the youth labor supply increased employers had less room to compress black wages than white wages. A second possible interaction is between the demographic increase in supply and employer discrimination. Even if the desire to discriminate on the part of employers was not increasing during recent decades, the increase in the supply of both young whites and blacks may have increased the scope for the exercise of discriminatory hiring by employers. This theoretical possibility was emphasized in the earliest exposition of an economic theory of discrimination by Becker.

While these higher-order interactions generate interesting hypotheses, they are extraordinarily difficult to assess empirically, particularly when they involve such factors as the minimum wage or discrimination, which have proved challenging to assess even as singular first-order factors.

Other Influences on Youth Employment

Several research findings do not fit neatly into the supply and demand framework we have used in the preceding sections of this chapter.

We note several of these briefly and then turn to a discussion of social context.

Family Influences and Teenage Experiences

Family background has a positive relationship to the probability that a young person is employed, and Meyer and Wise find that an increase of $5,000 in parental income is associated with an increase of more than three weeks in the number of weeks worked by teenagers.

Other family structure factors do seem to affect employment probabilities. Youths with siblings working are more likely to be working themselves, suggesting the importance of family connections for information or role models. Youths from female-headed families or families on welfare have slightly lower probabilities of being employed.

A somewhat surprising and potentially very important finding in several studies[19] is that there is a strong relationship between hours worked while in high school and later employment and wage rates. Whether the relationship is really causal or simply correlative (i.e., due to a common underlying factor such as motivation) remains unclear. Since one of the major factors in the growth in the gap between white youth employment rates and black youth rates was the growth of in-school employment, this finding is of some importance; the lesser opportunities for employment of blacks while in school may show up later in terms of lower hours and earnings. Obviously, for those interested in the potential benefits from employment and training programs for in-school youths, this finding is intriguing.

A final finding that has drawn the attention of many analysts is that the long-term (i.e., 4-5 years later) effects of unemployment during younger years, sometimes referred to as the "scarring experience of early unemployment," appear to be rather less than had been previously suggested. Once individual characteristics have been controlled for, the experience of early unemployment does not appear to raise the probability of unemployment in the following 4-5 years. This result appears to hold for both young men and young women.[20] In addition, once individual characteristics are held constant, initial wage levels seem to have little relationship to wage levels 4-5 years later. These relatively encouraging findings about the limited effects of early unemployment and wages are, however, counterbalanced by another finding: early unemployment experience does seem to affect wage levels 4-5 years later, and this effect appears to be stronger and more substantial for youths with lower levels of education.

Social Context

A final factor to be considered is the general social context and the way it may influence the formation of perceptions of youth and their responses to labor market opportunities. Past and current discrimination can affect the demand for youth in the labor market. At the same time, to the degree that this social context of discrimination affects the perceptions and attitudes and responses of youth, it can have an effect on the supply of labor as well. The appearance of limited opportunity for blacks in the labor market may have an effect on the rates of school continuation; where future prospects are poor, diligence in school may not appear to be a rewarding activity. The past exclusion of minorities from some occupations limits their chances to learn the requirements of such employment and to undertake the necessary preparation.[21] Changing social context may be especially important for minority inner city youth. The increased incomes of blacks resulting particularly in more middle and upper-class black has led, in recent years to a movement of some higher-income blacks outside the inner city ghetto. As a result, black inner-city communities may have experienced a loss of leadership and important successful role models for low-income youths and this may contribute to the problems faced by the remaining youths.[22]

III. THE EFFECTS OF YOUTH EMPLOYMENT AND TRAINING PROGRAMS

The most comprehensive review of the effectiveness of recent youth employment and training programs in the United States was undertaken by the Committee on Youth Employment Programs of the National Academy of Sciences, of which I was a member, and I will base most of my review of effectiveness findings on the report of that Committee. Another major review by Hahn and Lerman came to similar conclusions.[23]

The Problems of Measuring Program Effects

In the United States, the interest in evaluating the effectiveness of social programs has increased considerably over the last two decades. As evaluation efforts have multiplied the questions which evaluations seek to answer have become more complex, the methodologies for evaluation have become more refined and the standards of evidence applied have increased. This is not the place to go into a long review of these developments, interesting as they may be in their own right. However, it may be appropriate to sketch out the kinds of questions which evaluations of programs have sought to address. Here is one brief outline of the kinds of questions posed:

- Can the program be implemented?

  Can the appropriate program structure be created, staff recruited and maintained, participants of the appropriate type recruited and enrolled; can the specified "treatment services" be delivered?

- What happens to the participants during the in-program period?

  How long do participants stay in the program? How are their lives changed during the period they are in the program: do they work and produce more or less than they would have had they not been in the program, do they earn more or less, do they receive more or less transfer payments (in cash or in kind), do they have more or less educational attainment, do they commit more or less crime, do they abuse drugs and alcohol more or less, is their marital or family status different than it would have been?

- What happens to participants after they leave the program?

  How are their lives changed from what they would have been had they not been in the program (the same list of questions as in the previous section but applied to the post-program period)? Do the effects on their lives (if there are any) decrease, increase or stay the same over time?

- What is the cost to benefit or cost to effectiveness ratio for this program?

What are the costs per participant in the program, from the perspective of society as a whole, from the perspective of the participant, and from the perspective of those not participating in the program? What are the benefits from these three perspectives?

On the surface it may appear that rather straight forward procedures will yield answers to these questions for any given program. In fact, however, providing answers to these questions in a fashion which meets some reasonable standard of evidence is usually quite difficult.[24]

It is the phrase "How are their lives changed from what they would have been had they not been in the program?" which presents the greatest difficulty. In order to say how their lives have changed, we have to say what their lives would have been otherwise. The method which has increasingly been used is to locate a "comparison group" of individuals similar to those who have participated in the program, measure their behavior in the same way as the behavior of those participating in the program and, from these measurements, derive an estimate of what the lives of participants would have been like had they not been exposed to the program.

Over the years a number of different ways of creating "comparison groups" have been tried. Increasingly, however, it has become apparent that for employment and training programs most of these methods are vulnerable and subject to errors. Subtle differences between participants and comparison group members exist which can effect the outcomes (earnings, employment) but which are not themselves measured; the contrasts between the participants and the comparison group are subject to "selection biases." The method which is least vulnerable to such biases is random assignment. When random assignment is used, persons applying to the program are assigned to participate in the program or to be members of the control group by a random process - each individual has an equal probability of being a participant or a member of the control group.

The conclusion that random assignment is necessary has emerged slowly over the years as experience with alternative methods of creating "comparison groups" has grown. Indeed, the most telling studies on this point have been published in the last few years.[25]

Researchers took data from an employment program, Supported Work (described in more detail below), for which control groups had been created by random assignment, and, therefore, measured program impacts which could be presumed not to be subject to selection bias. Then the researchers constructed comparison groups from other data sources in a fashion strictly analogous to the procedures used by many researchers evaluating employment and training programs. They then estimated program impacts by contrasting the program participants' employment and earnings with that of the created comparison groups. These constructed-comparison-group impact estimates were compared to those estimated from the contrasts of participants with the randomly assigned control group. The created comparison groups yielded estimates which were in some cases wrong by orders of magnitude.

These results strongly suggest that, when one is looking at evaluations of the effects of employment and training programs, it is necessary to examine carefully the basis on which the effects on the lives of participants are estimated: how sound are the procedures by which the comparison group was created?

Another major problem is loss of sample subjects during the evaluation study the problem is commonly referred to as "sample attrition." This is particularly troublesome when there is differential attrition between the participant group and the comparison group. Even if, at the outset, the participant group and the comparison group were reasonably well matched, if there is differential loss which is substantial by the time of later measurements, there may be attrition bias in the estimates of the program effects.

Another major difficulty to be faced in obtaining reasonable answers to the questions outlined above has to do with the length of the follow-up in the post-program period. If we are interested in the answers to questions about the effects of the program listed above, then it is necessary to follow both participants and comparison group members for a long period of time after the participants leave the program. Experience shows that sometimes positive program effects take as long as six moths to emerge. In other cases, positive effects show right after the program fade within a few months. Thus, longer-term follow-up is necessary for a sound evaluation of a program's effects, particularly if there is a concern to carry out a cost-benefit or cost-effectiveness calculation.

While this is far from a satisfactory review of the problems of evaluation, it is rather long as an introduction to a review of findings about the youth programs' effects. I have taken space to make these points, however, because they provide a basis of justification for the standards applied in assessing the evidence on program effects. If we are going to decide what is known about the effects of youth programs, we should be fairly clear about what constitutes reasonable evidence concerning those effects.

Given that testing of the efficacy of different programs was explicitly written as an objective in the legislation, one would have expected to emerge from the experience of the YEDPA period with a considerably enhanced knowledge of the effectiveness of various types of youth programs. I turn now to the review of the knowledge of program effectiveness.

What Works, For Whom?

The National Academy Committee, whose results I primarily draw upon for this review of effectiveness, applied standards of evidence closely related to the points about evaluation just reviewed. The Committee began with over 400 reports on youth employment and training activities, almost entirely those relating to projects funded under

YEDPA. It screened the reports and maintained for further review concerning effectiveness only those which met the following criteria:

> "1. That there be pre-program and post-program measurement of major program objectives [primarily employment and earnings];
>
> 2. that comparable comparison group data be presented; and
>
> 3. that initial sample sizes and response rates for participant and control groups be of sufficient size, pre-program and post-program, to allow usual standards of statistical significance to be applied to measured program effects, and to alleviate concern for attrition bias."

I believe that most social scientists would find these reasonable criteria for what constitutes good evidence on effectiveness.

The Committee was surprised and dismayed to find that out of 400 reports on projects only 28 projects had reports on effectiveness which met these simple standards.

The Committee found itself forced to base its conclusions about the effectiveness of youth employment and training programs on the evidence bearing on these 28 projects. It noted that these 28 projects covered, to some degree, a majority of the types of demonstration programs mounted under YEDPA, as well as the other major program categories (except for the Young Adult Conservation Corps), but that the quality and extent of coverage was very uneven:

> "The reports that met [reasonable standards of scientific quality] were not necessarily evenly distributed over the range of operational youth programs or target groups being served. Thus, there are issues with respect to the role and effectiveness of youth employment and training programs that we could not address due to a dearth of reliable evidence. In addition, the quality of the available evidence varies, sometimes supporting strong conclusions, sometimes merely suggesting the direction of program effects."[26]

Because of the limitations of the extent and quality of evidence the Committee emphasized:

> "we caution the reader to bear in mind that to make a determination of either effectiveness or ineffectiveness requires credible evidence. Lack of evidence is not synonymous with lack of effectiveness."

With these caveats in the background, I turn to a review of the evidence. There is not space here to review all the details regarding individual programs. Therefore, I first report broad conclusions about program types and then review in more detail three significant programs.

Broad Conclusions About Effects of Youth Programs

In order to review a large range of youth employment and training programs in a reasonably concise fashion, it is convenient to group the programs into broad categories,[27] but to report separately under each category programs designed primarily for in-school youth and those designed primarily for out-of-school youth.

In what follows I focus solely on the estimates of post-program effects of the programs.

(a) Occupational skills training

For in-school youth, there were virtually no skills training programs which had been adequately evaluated so no conclusions could be drawn.

For out-of-school youth, the Job Corps was the major occupational skills training program and, as indicated in the fuller review below, a very high-quality evaluation indicated that the program was quite effective. The program had many different components and the evaluation was not designed to assess the components separately so we do not know, for example, how important was the residential aspect of the program or the remedial basic education. The benefit-cost analysis showed that, in spite of the fact that costs per participant are quite high, the net present value of estimated benefits exceeds that of costs. It is clearly concluded that a residential skills training program containing elements like Job Corps can be very effective for youth from disadvantaged backgrounds.

(b) Labor market preparation

This category contains a mix of program types: career exploration (information on opportunities and requirements); basic education training often leading to a General Equivalence (GED) certificate (equivalent to United States high-school completion); orientation to "the world of work" with some direct job experience.

For in-school youth, once again there was no reliable evidence available.

For out-of-school youth, these programs appeared to have generated some positive effects on employment and earnings in a three- to eight-month post-program period, but there was no reliable evidence about whether these effects would be sustained for a longer post-program period. For these programs, then, there is some hint of positive effects, though the evidence is weak.

(c) Temporary jobs

These programs provide temporary, often subsidized, employment for youth.

The major program for in-school youth was YIEPP which I review in detail below. It must be concluded that we do not know whether this program had post-program effects. This is particularly to be regretted because non-experimental work had found a strong relationship between work during the school years and better employment and earnings in the labor market after school.[28]

The Supported Work demonstration, described below, was the major example for temporary work programs for out-of-school work. A careful evaluation based on a random assignment design showed that this program had no long-term effects on youth and its costs far outweighed its benefits. This program did serve a particular disadvantaged segment of the youth population, so it may be that its negative conclusions cannot be generalized to the out-of-school youth population in general.

(d) Job placement

Programs in this category spend most of their effort in finding job opportunities for youth and referring youth to an employer which has a reasonable match to the youth's interests and abilities. They usually also include some training in job-search techniques, how to prepare resumes, conduct in job interviews and sometimes follow-up support once the youth is placed in a job.

For in-school youth these programs appear to have increased employment and earnings in the year following the program, but by the second year the effects had disappeared. The conclusions are the same as for out-of-school youth in such programs: short-term positive effects, with comparison group members catching up by the second year.

Three Significant Youth Programs

As noted above, a review of youth programs showed that there were very few programs for which there existed evaluations of effectiveness of sufficient quality to constitute sound evidence on what works. In view of this, and because the reader may not be familiar with the characteristics of particular programs in the United States, I provide a more detailed description of three major programs. I have selected these programs for discussion because they are generally regarded as particularly significant with respect to evaluation of effectiveness. All were sizeable in terms of numbers of participants, and quality evaluation research has been done on them.

(a) The Job Corps

The Job Corps program has been run for 20 years by the federal Government. It is a program for out-of-school, economically disadvantaged youth between 14 and 21 years old. A key distinguishing feature is that it is residential, i.e., the participants live in quarters at the site where the program services are provided.

The program provides a complex mix of services including remedial (basic) education, vocational skills training, work experience, health services, and job-search assistance at sites scattered throughout the United States. In fiscal year 1985, the program had 41,000 positions and served 120,000 participants. The average length of stay in the program was about five months. The youth served were in general quite disadvantaged: 90 percent were either from households below the poverty line or receiving welfare benefits; their median reading levels were at the sixth-grade level. At the time of the major evaluation study (1977), the cost to the Government per participant was $5,700.

The major evaluation of the Job Corps was of high quality. It had a large sample of program participants (2,800) and a non-participant comparison group (1,000). The data were gathered on participant and comparison groups for three to four years and there was a low attrition rate from the sample over that time (70 percent completed the third follow-up). The comparison group was carefully drawn from youth eligible for Job Corps but residing in geographic areas where Job Corps enrollment was low. The best econometric methods available were used to try to control for selection bias. Measurements were taken on a wide variety of factors that could be affected by, or affect, Job Corps experience, including educational attainment, the value of economic production by Job Corps participants, receipt of welfare and other transfer payments, marital status, the rate of pregnancy and child-bearing (for the female participants and comparison group members), the extent of criminal activity, receipt of welfare or other transfer payments, unemployment rates, employment rates, hours worked and income. A careful and complete cost-benefit analysis was done as part of the evaluation.

The evaluation results were:

- After leaving the Job Corps the participants' earnings were 28 percent higher than those of the comparison group (a differential $567 per Corps member in 1977 dollars).
- Educational attainment of the participants increased more than that of the comparison group: within the first six months after leaving the Job Corps the probability of attaining a high-school degree or equivalent was 0.24 for participants vs. 0.05 for those in the comparison group.
- Criminal activity was significantly lower for participants than comparison group members during the period they were in the program and after leaving the program, participants had fewer arrests for serious crimes than did comparison group members.
- After an initial six-month post-program period when enrollees fared worse than the comparison group in terms of employment and earnings, the aggregate positive effects of the Job Corps emerged and persisted at the relatively stable rate throughout the four-year follow-up period. This suggests that the main effects of Job Corps did not stem from job placement alone.
- When the benefits and costs of the program were estimated it was found that, from the view of society as a whole, the net present value of benefits exceeded costs by $2,300 per enrollee (in 1977 dollars). Careful sensitivity analysis was performed to see whether variations in any of the key

assumptions which had to be made for the cost-benefit analysis would overturn the conclusion of benefits exceeding costs and it was found that the positive conclusion was robust under reasonable variations in assumptions.

It is clear that on the basis of this evaluation the Job Corps could be judged to be effective in helping disadvantaged youth. A couple of problems remain however.

First, while the comparison group was very carefully selected and the best econometric methods to control for selection bias were used in analysis, some doubts may remain about selection bias because random assignment to participant and control group was not used. Recent work (discussed above) has cast some doubt on whether, particularly for youth, selection bias can really be avoided when constructing comparison groups by methods other than random assignment and whether the econometric methods commonly used can largely remove any selection bias that results. In spite of these concerns, one should conclude that the best evidence available indicates that the Job Corps is effective.

Second, while we may conclude that the Job Corps is effective, we have no good evidence regarding which aspects of the program are the most important contributors to its effectiveness. As was noted above, the Job Corps is a program with a complex array of elements and one would like to know which elements are most important. For example, a critical issue is whether the residential setting is essential to program effectiveness. Computerized instruction was widely used in the education segments of the program and there is a question whether this was critical for the success of the program in fostering gains in educational attainment. Evaluation research to date provides no answers to these questions but, as will be discussed below, some demonstration research currently under way may help to provide some insights on these issues.

(b) Supported Work

Supported Work was a national demonstration program which ran from 1975 to 1979. The program had four target groups: women who had been on welfare (Aid to Families with Dependent Children) for at least three years; ex-drug addicts; ex-criminal offenders; youth (17-20 years old) who were high-school drop-outs. These groups were felt to need employment assistance as they had not recently, or in some cases ever, had a regular connection with the labor market. The objective was to help them establish, or re-establish, regular employment. To achieve this, participants were provided with subsidized work experience in which work standards were gradually made more demanding and, throughout, participants were supposed to be guided by supervisors knowledgeable about the problems of the target groups. Participants could continue in the program for up to 12 months (18 months in a few sites) after which they had to move on to regular employment (or back to unemployment if they were unsuccessful - even with the program's assistance - in finding work). Note that this was explicitly not a program providing skills training; such skills as were obtained during the program experience were to be the result only of direct work experience.

The demonstration was run in 15 sites across the country, different sites having different combinations of the target groups. At five of the sites youth were enrolled as participants.

An extensive evaluation effort was carried out in which applicants to the program were randomly assigned to be participants in the program or to be members of the control group. Both participants and controls were interviewed at the point of random assignment and every nine months thereafter, up to a maximum of about 36 months. A full cost-benefit analysis of the program was carried out. Attrition from the sample followed was such that over 70 percent of the sample was reinterviewed at each interval. The entire national demonstration enrolled over 10,000 participants over its course. The youth segment of the evaluation study covered 860 youth participants and controls.

The evaluation showed that while the hours of work and earnings of the participants increased relative to the control group during the period in which the youth were in the program (hardly surprising since both were unemployed at the point of random assignment and the participants were given immediate access to the subsidized job), once they left the program there were no statistically significant differences in employment or earnings. The program had no statistically significant long-term impacts on education or training decisions, drug use, or criminal behavior. The results of the cost-benefit analysis, which was very complete and included sensitivity analysis for key assumptions, showed that from the point of view of society as a whole costs exceeded benefits by $1,465 (1976 dollars) per youth participant.

The Supported Work demonstration showed that for the type of youth served (even more disadvantaged than those served by the Job Corps) a work experience program alone had no significant effects on long-term employment. Whether this negative conclusion about this type of work experience program can be generalized to the youth group who are less disadvantaged than those in Supported Work is, of course, open to question.

It is worth noting that the program did have statistically significant positive effects on employment for two of the other target groups in the demonstration, women on welfare and ex-addicts. For these two groups, benefits of the program were shown to exceed costs, when evaluated from the social point of view. Thus we can preclude the possibility that the negative findings for youth were solely the result of a poorly executed program or flawed evaluation.

I believe it is important for people to be aware of the Supported Work evaluation because it shows that rigorous evaluation can tell us when programs don't work as well as when they do. If we are serious about finding programs that really do help those with employment problems, the bad news is just as important as the good news; resources being used ineffectively help no one and it is important to find out when this is the case and to reallocate them.

As was discussed above, the Supported Work data have also provided a means to draw some strong conclusions about the problems of using constructed comparison groups (as opposed to randomly assigned control groups) for the purpose of evaluation of employment and training programs.

(c) Youth Incentive Entitlement Pilot Projects

The legislation creating YEDPA mandated the establishment of the Youth Incentive Entitlement Pilot Projects (hereafter referred to as YIEPP). The program, which lasted from 1978 to 1981, provided a guaranteed minimum-wage job, part time during the school year and full time during the summer months. The key innovative feature of the program was that all low-income youth who lived in the designated target area of a project were guaranteed a job (thus the "entitlement") provided that they remained enrolled in school or in an approved alternative education program and were making reasonable progress toward a high-school diploma. The short-term objectives of the program were to reduce school drop-out rates, provide work experience and raise incomes of program participants during the program phase. The long-term objectives were to foster, as a result of the program experience, improved employment and earnings after the program period.

There were 17 demonstration projects across the country and about 70,000 youth participated. It should be noted that YIEPP was not a skills training program nor a job-search program. The program was expected to generate effects through either the work experience or through the benefits of any induced continuation of school enrollment.

The evaluation research on YIEPP posed a serious problem because of the "entitlement" nature of the program: an area selected would be "saturated" with job opportunities; thus it would be impossible to draw a comparison or control group from the same area as every low-income youth would be "entitled" to a subsidized job. Moreover, the "saturation" of job opportunities could have an effect on the local labor market which might make the employment experience of even those who did not participate atypical, i.e., one could not use them to infer what would have happened to the participants in the absence of the program.

The evaluation research design called for the selection of four large-scale sites to be evaluated and four other sites at which the program was not offered to serve as comparison sites. An attempt was made to match the program sites with comparison sites in terms of important characteristics of the population, industry and employment. The results were: Cincinnati, a program site, was matched with Louisville; Baltimore with Cleveland; rural Mississippi counties with other rural Mississippi counties; Denver with Phoenix. Stratified random samples of youth were selected in both the program sites and the comparison sites and were interviewed at the outset in 1978 and then reinterviewed up to three more times through the end of 1981 (the completed sample included 4,046 youth). In the final analysis, individuals in the program sites were compared with those in the matched non-program site to seek to determine the impact of the program.

I will first review some of the reported major findings of the evaluation of YIEPP and then indicate some major doubts I have about the validity of these results.

Statistically significant effects on weekly earnings are reported both for the in-program period and for the post-program period. In-program earnings effects during the school year were estimated to range between 46 and 161 percent higher than earnings in the absence of the program. During the summer, earnings effects were estimated at 48 to 65 percent higher.

During the period of operation, YIEPP significantly lowered unemployment rates and raised employment and labor force participation rates for young blacks as well as for all youths. Importantly, in light of the discussion above of the disturbing growth in the employment differential between whites and blacks, the program raised the employment-to-population ratio for blacks from 21.1 to 41.32 percent for blacks and from 31.2 to 37.4 for whites, essentially eliminating the differential. In addition, about two-thirds of all youths eligible for the program in the target sites did participate at some time. These results suggest that youths are willing to work at the minimum wage but that, in the absence of a program like YIEPP, employers are unwilling to hire (at the minimum wage) as many youth as want to work.

A stated objective of YIEPP was to increase school-continuation rates (reduce drop-out rates) of the low-income youth eligible for the program. Indeed, continued enrollment in an education program was a condition for continuation in the program. The evaluation concluded that the program had no effects on school-continuation rates; the entitlement to a job was not a sufficient incentive to keep youths in school nor induce those who already had dropped out to return to school.

The ability to estimate the effects of the program experience on employment and earnings after the completion of the program was severely limited because the evaluation study was terminated in the Fall of 1981 when there was only a very limited post-program period for most of the participants in the sample. For reasons touched on below, the final analysis was focused primarily on the sample of black youth. The estimated effect of the program on this group was to increase substantially (39 percent) the weekly earnings of those eligible for the program, an effect which if sustained over a year would yield an earnings increase of $545. If such effects were indeed generated and sustained, this program would look very promising: it would provide benefits to disadvantaged youth both immediately through increased employment and earnings during the program and, later, in terms of a better post-program employment and earnings experience.

Unfortunately, there are serious methodological problems that make it difficult for us to accept the evidence from this evaluation, particularly with respect to post-program earnings. It is worthwhile to touch on these problems because they show the difficulties which any attempt to evaluate "saturation"-type programs will face.

At the heart of the issue is the question of whether it is really possible to match geographic areas in such a way that the changes over time in the labor markets of one site can serve to indicate how labor markets would have changed over that period of time in a matched comparison site. The necessity to match sites in this way arises from the "saturation" nature of the program. If the program is large enough in a local area to assure an opportunity for program participation of most members of a group in that area, then it is likely to change the labor market circumstances in that area, generating indirect labor market effects even on those who do not participate. Thus to be sure that comparison subjects are unaffected by the program, they cannot be drawn from the same local area where the program is operating.

The belief that one could effectively match geographic sites so their residents could be used as comparison subjects requires a belief that all the factors which determine the evolution of the local labor markets have been captured and adequately matched at the outset, and that any changes in the context external to the locale or which will perturb its labor market are also measured and controlled for in the analytic model used to estimate program effects. We doubt that the knowledge of the factors which affect the evolution of local labor markets and the ability to accurately model and predict that evolution is sufficiently advanced to rely upon it for evaluation purposes. Indeed, some of the experience from the YIEPP evaluation underlies the nature of the weaknesses in this matched-site methodology for evaluation.

The final analysis sample was limited in two ways: first, the major analysis excluded whites and Hispanics, even though data had been gathered on them; second, the Denver/Phoenix pair of program and comparison sites was excluded from the analysis because the Denver program had "implementation difficulties." The exclusion of the Hispanics from the analysis was tied to the exclusion of the Denver/Phoenix pair because the Hispanic sample was highly concentrated in this pair of sites. The rationale for the exclusion of whites was that a large portion of the comparison sample of whites was concentrated in the Louisville site which experienced very sharp drops in white school enrollments and this decline was perhaps due to a controversy over school busing.

A third example of site-comparison problems emerged when the evaluators looked at the individual site results. They found that there was no significant effect on post-program earnings for the Baltimore site which had a program which was generally regarded as the best designed and implemented. The evaluators suggested that this result might be due not to a weak performance by Baltimore but to an unexpectedly healthy economy and, therefore, good youth employment growth, in the comparison site, Cleveland. These examples provide concrete evidence that evaluation based on the use of matched comparison sites is very vulnerable to unpredictable developments.

YIEPP was indeed a significant and sizeable program designed to investigate the importance of direct job experience for low-income youth. Many important things were learned from the demonstration about the feasibility of placing large numbers of youth in jobs. It showed that a sizeable proportion of youth would take such jobs. However, to the degree that the long-term effect on employment and earnings is a major concern, in spite of some indications in the data that it may have had long-term effects on employment and earnings, we are forced to conclude that the method of evaluation is so flawed that we really do not know whether this is an effective strategy for helping such youth.

Some Guidelines for Future Work on Youth Programs

One could devote considerable space to a discussion of why so little was learned about what works for whom. I will not take that space here, but refer those interested to the fuller review in the National Academy report. Below, I will report a few simple guidelines for future work which I believe will enhance the likelihood of learning more from our experience with youth programs.

One is often asked: Based on experience to date what are the best kinds of youth employment and training programs? It is very tempting to launch into speculation about what is best or what is most promising. But I think it is very important to resist that temptation, to be brutally honest about the limits of our knowledge, to differentiate known facts from best guesses. There are, however, a few hard lessons which can be drawn from the review of recent experience.

These may indeed seem very limited conclusions to report after the massive program efforts undertaken under the YEDPA legislation. Sadly, it is an honest summarization of the state of knowledge about the effectiveness of various types of youth employment and training programs.

- for in-school youth

  If the primary concern is to equalize employment rates of minority and majority groups during the in-school period, the YIEPP program, basically a work-experience job-subsidy program, shows it can be done. Whether there are long-term effects remains unknown and seems worth further trial and investigation. Job-search training can help promote employment in the short term, right out of school, but by itself will have few long-term effects.

- for out-of-school youth

  Residential skills training programs like the Job Corps appear effective, at least for those with very low levels of educational attainment. Work-experience programs alone are unlikely to have long-term effects on employment and earnings. Job search instruction will have a short-term effect but should not be counted on for sustained improvements.

If we now assume a commitment to keep trying to use employment and training programs to alleviate youth employment problems, then some speculations about promising future efforts can be made on the basis of even these limited findings.

First, while job-search training in itself is unlikely to have long-term effects, it probably should be added as an element to programs which have a central core of a different type, e.g., a skills training program. The job-search training may help in the initial transition from the program to the labor market and then the skills training may provide the sustained effects; the effects of a combined program might be multiplicative.

Second, for out-of-school youth, some attempts should be made to determine which elements of the Job Corps-type training are most important. Testing non-residential skills training (see the discussion of the Job Start program below) for them seems a logical first step and, within that, further testing of how differing degrees and forms of basic educational instruction affect long-term outcomes would be important.

Third, for in-school youth a serious and careful test is needed of whether increased work during the school period really has long-term positive effects on employment and earnings (while at the same time not reducing educational achievement).

There are a lot more subsidiary issues that are worthy of investigation but if we have learned nothing else we should have learned that it is better to do a few things carefully and well, with a strong commitment to proper evaluation, than to attempts many different things without being able to determine their effects.

In the U.S., the flow of resources to the youth employment and training program has been sharply reduced even though the magnitude and character of the youth employment problem remains about as it was at the outset of the eighties. In the late 1980s, however, there has been some movement towards trying to build on some of the lessons outlined above, in the careful manner suggested. I turn, therefore, to a review of developments in the 1980s, touching on both changes in legislation and new experimental programs.

IV. DEVELOPMENTS IN YOUTH PROGRAMS IN THE 1980s

New Legislation: JTPA

As noted above, the strong emphasis on employment and training programs for youth ended in 1981 with the termination of the YEDPA programs and, at the same time, the ending of the overall Comprehensive Employment and Training Act (CETA) programs, which covered employment and training for all segments of the population. In 1982, the Reagan Administration passed the Job Training Partnership Act (JTPA). This Act made some very important changes in the structure and content of federally funded employment and training programs.

As it is my task here to review the elements of JTPA, I will limit my observations to just one relevant to opportunities of black youth in these programs.

It seems clear that the orientation of the PICs and the emphasis on performance standards have tended to bias local programs against seeking out those youth with the most serious problems and trying to provide them with training. Operators working under performance contracts are reluctant to take on high-risk youth. It has always been difficult to get local programs, even under CETA, to seek out such youth and the changed structure of JTPA has given employment and training agencies even greater impulse to avoid those participants with whom it is regarded as difficult to deal.

Current Issues Related to Youth Employment and Training

1. The quality of schooling

In the United States, in the 1980s, problems with the performance of students in school have received increased attention. There was a general perception of a precipitous decline in test scores during the late 1970s and early 1980s. The detailed facts do not support this general perception. They show that most of the decline in test scores was related to particular birth cohorts and worked its way through the school system as those cohorts passed through. Thus the decline in test scores in the fifth grade ended in 1974 and a sharp rebound began which continued up to the latest date available (1984). The same phenomenon occurred with scores at other grade levels, eighth grade scores bottoming out in 1978 and rebounding and 12th grade scores bottoming out in 1979 and rising thereafter.[29]

Regardless of facts, there has been increasing emphasis at the local, state and national levels on raising achievement standards in the schools, lengthening the school year and enhancing the pay and status of teachers. Federal and state governments are increasingly collecting and releasing information on performance on test scores, state by state and even school district by school district. These scores are widely reported and used as a means of comparing present and past school performance and relative performance of various states or schools.

Note that while this emphasis on increased standards may be laudable it may exacerbate the problems of the populations with the greatest employment difficulties, high school drop outs. Unless the increased standards are combined with more effective programs they may serve simply to further separate the school population and increase the "pushing out" of lower income, minority kids who are already having problems making it to that all important high school diploma.

2. Drop-outs and teenage child-bearing

While attempts are being made to improve the standards in schools, there has been a concomitant increase in attention paid to the high levels of school drop-outs, with concern expressed that steps be taken to reduce such high rates. Even though the high-school drop-out rate has remained roughly constant over the past decade at about 13 percent, there has been increased awareness of the fact that high-school dropouts have diminished prospects in the labor market (as noted above in the discussion of the nature of the youth unemployment problem) and the gap between drop-outs and school completers has widened.[30]

Intertwined with this focus on drop-outs is an increasing concern about early child-bearing by women in the school-attending ages.[31] The fact that there is a relationship between early pregnancy and high drop-out rates among women in school has been widely noted. Here again, there is considerable misperception about what has been happening. The rate of pregnancy and child-bearing amongst teenagers has actually been going down. But the rate of illegitimate births has been going up, since decreasing proportions of those teenagers who have children have married, and those who do marry have been divorced with a much slower rate of remarriage. The result, of course, is an increasing proportion of children born into female-headed households. This not only is a problem for the single female parent, but, it has been increasingly apparent, it creates difficulties for the unwed fathers, putting added pressures on a group that already was bound to have difficulties making the transition from school to work.[32]

3. Literacy and basic skills

There has been a sharpened perception that those youth who drop out of school, and many of the teenage parents, have extremely low levels of basic literacy skills. In addition, some believe that employer standards, in terms of a high-school degree or minimal test scores, for entry-level jobs have been rising. Indeed the media and some analysts have seen an inter-relationship among the role of basic skill weaknesses, technological change and decreased ability of the U.S. to compete internationally.[33]

The argument is that increasing international competition and changes in technology have reduced the range of low skill jobs which will be available in the future at the same time that the demographics of the U.S. population are likely to lead to decreasing numbers of new entrants to the labor force and declines in the skill levels of those entering. These "adverse demographics" are said to arise from the decline in the youth population (outlined above) and an increasing proportion of minorities and persons raised in low income and single parent families, characteristics which have been related to lower levels of academic achievement as conventionally measured. This conjuncture gives rise to the "skills mismatch" hypothesis. These arguments lead in turn to strong proposals for educational reforms and to increasing pressures on the employment and training system to put substantial resources into the provision of remedial education and other forms of basic skills training.

It is important to evaluate these arguments carefully. While most attention has been paid to those raising the cry of "skills mismatch" some analysts have questioned both sides of the proposition.[34] It is interesting to note that a similar concern that a large segment of the labor force would be "left behind" was one of the motivating forces behind the first major Federal training program, the Manpower Development and Training Act. At the same time the National Commission on Automation evaluated similar arguments about the impact of changing technology and found them overstated.

The pressure for increased "basic skills" training in the employment and training system is already mounting and a number of programs are trying different approaches, partly in response to legislative pressures.[35] Further, within the JTPA program there is increasing evidence that admission to training programs is being limited to those who score on screening tests above a certain grade level in reading and math - a trend undoubtedly fostered by the emphasis on performance standards. Thus, at the same time there is increased pressure to provide remediation for those with weak skills, the incentives in the system seem to be causing them to be screened out.

Thus, increasingly, there has been a concern to find the means to provide remedial education for the school drop-out and young adult population. The employment and training system is seen as one of the possible vehicles for providing such remedial education. These concerns highlight the very complex and difficult problems concerning the relationship between the school system, on the one hand, and the employment and training system, on the other hand, a topic which requires a good deal more careful study. Is the employment and training system likely to be an effective vehicle for providing such remediation?

Where attempts at basic skills training are already underway three important issues have arisen. First, some programs try to provide the remedial elements prior to occupational skills training (referred to as sequential programing) whereas others try to integrate the remedial elements with the skills training (referred to as concurrent programing) and there is considerable debate about which is most effective. If there is to be widescale remediation or "literacy training" as part of the employment and training system, the relative effectiveness of these methods should be carefully evaluated. Second, partly based on the Job Corps experience, there has been considerable interest in using computer assisted instruction to carry out remediation work. There is a considerable amount of such instruction now taking place in training programs but it appears that its relative effectiveness is not being rigorously evaluated. Third, while recently some studies have shown strong relationships between academic grades or test scores[36] and later labor market performance and the experience of the Job Corps and other programs indicates that programs can generate changes in test scores and rates of GED attainment, there are no studies I know of which examine the relationships between changes in academic test scores or attainment induced by training programs and later labor market performance. Careful evaluations with long term followups need to be made to determine both how long the differences in test scores are sustained ("fadeout" of differences are common in other education programs) and whether these differences translate into differences in labor market experiences.

New Experimental Programs

While, as noted above, funding from the federal level for youth programs has been considerably reduced and the emphasis on performance standards has tended to cause those youth programs that are funded under JTPA to gravitate to the less disadvantaged in the youth population, there are several substantial experimental programs under way that seek to address the education and employment problems of disadvantaged youth and do so in a way which could yield reliable evidence on program effectiveness.

1. Job Start

One of the strongest findings in the review of youth program effectiveness, outlined above, was that the Job Corps was an effective program for out-of-school youth. Partly as a result of those findings, attempts by the Reagan Administration to reduce or eliminate funding of the Job Corps were turned back. Still, questions remain about which aspects of the Job Corps are most important in generating the positive post-program effects.

In order to further test the potential role of skills training programs, the Job Start program has been developed by the Manpower Demonstration Research Corporation. This program seeks to test whether the types of training and services offered by the Job Corps are equally effective when provided in a non-residential setting. Like the Job Corps, Job Start programs are supposed to provide basic education instruction, occupational skills training, training-related support services and job development and placement assistance. Job Start programs have been initiated in 13 sites across the country. About half of these sites use some form of computer-aided instruction (which was a notable feature of the Job Corps educational component). The sites for this program were recruited from among existing education and training agencies with ongoing programs so, while there are broad minimal guidelines which programs agreed to meet, there will be considerable variation among sites in the details of program implementation. This program will be carefully evaluated through a research design that calls for random assignment of applicants to participant or control-group status and the participants and controls will be followed for over 12 months after random assignment. It can be expected, therefore, that there will be high-quality estimates of the impact of the program on educational attainment, criminal behavior, child-bearing, and employment and earnings.

2. Summer Training and Education Program (STEP)

It has long been noted that the gap in academic achievement between low-income and high-income students becomes more pronounced as they progress through the school system. Several years ago researchers found that the gap widens particularly during the summer months when students are not in school; the test scores of low-income youth fell sharply during the time they were not in school. The STEP program, started by Public/Private Ventures, has been created to determine whether the combination of half-time work and half-time basic skills remediation during the summer months would slow or stop the decline in test scores of low-income youth and thereby attenuate the achievement gap and increase the school-completion rates of low-income youth. The program is targeted on 14 and 15-year-olds who are poor and performing poorly in school. They participate in the program for two summers. The program also includes a life-skills curriculum that encourages youth to make responsible choices regarding sexual activity.

This is a good example of an imaginative use of the funds available through the Summer Youth Employment and Training Program (JTPA

Title IIb) which pays the stipends to the participants and aids them in finding the part time work positions.

The program is being run in five sites across the country. The evaluation research design incorporated random assignment to participant or control-group status. Participants are tested before and after each summer and survey data provides information about their knowledge and attitudes regarding sexual activity. There will be long-term follow-up data on school retention, graduation, child-bearing and early labor market experiences. Early results showed both participants and controls experienced learning losses during the summer but that the losses of the participants were less than half that of the controls. On the early evidence, this looks like a promising program for low-income youth still in school. Plans are underway for its expansion to many more sites but it is regrettable that there are no plans for further evaluation of the impact of the program at these expansion sites.

V. POLICY RECOMMENDATIONS

In this section I discuss in a more extended fashion the policy recommendations which were previewed at the outset of the paper.

In spite of the long, continued recovery of the U.S. economy from its major post World War II recession in 1982-83, the employment problems of black males remain substantial. The unemployment rate for black males is 2.3 times that of white males, even in this current relatively tight labor market situation. An even more meaningful statistic is the employment-to-population ratio which for all black males in 1988 still had not returned to the level that it had attained in 1979, which in turn was substantially below the level it had been in the 1960s and early 1970s.

The employment problems of black youth are particularly serious. Less than one-third of black males 16-19 were employed in 1988, and their employment-to-population ratio was still below the level it was in 1979, which was itself substantially below the levels of employment-to-population ratio for the 1960s and early 1970s for this group. Thus, it remains important to pursue the question of how employment and training policies can address the problems of employment for black males, and for black male youths in particular.

In considering the employment problems of blacks and what government policies and programs might do most to alleviate those problems it must be emphasized that the most important policies affecting the employment of black males are monetary and fiscal policies which influence the general state of the economy and the tightness of labor markets. No employment and training policies can come close to providing the improvement in employment of black males that sustained low unemployment rates throughout the economy provide. The sharp recession of 1982-83 generated by the monetary policies did enormous harm to the employment of blacks in general and black youth in particular. It is critically important to them that labor markets stay as tight as they currently are for an extended period of time so that the benefits of employment and related improved incomes can work their way deeper into the troubled heart of the central city and begin to give inner city youth better reasons to believe that staying in school, getting job skills will pay off for them. When the threat of inflation tempts policy makers to consider contractionary policies it is important that they be reminded of the terrible price paid by black people for the contractionary policies of the past and that they consider alternatives to induced recession (e.g., incomes policies) as a means of reducing inflationary policy.

In addition, tight labor markets are very important for the success of such employment and training programs as are offered by the Department of Labor. Training people in skills makes little sense if labor markets are already flooded with an excess supply of experienced but laid off workers. When discussing employment problems in the context of a Department of Labor initiative, such as the Commission for which we write these papers, there is a tendency to think only in terms of those government policies which fall immediately within the purview of the Department of Labor. But those policy makers with responsibility for broad macro policies often lose sight of the particular, focused impact of those policies on sub-groups of the population; voices reminding them of how their policies may have long term effects on inner city blacks and other minorities may encourage them to err a bit on the side of inflation in order to preserve the gains to this population generated by continued tight labor markets.

I turn now to narrower policy recommendations. The policy recommendations which are outlined below apply, for the most part, to the employment and training system in general; they are not stated solely in terms of their effect on black males. However, the strengthening of the system which would follow from these recommendation would, I believe, have its greatest impacts on blacks in general and black males in particular.

A. The Employment and Training Policy and Program Process

Before turning to specific program and policy issues, I want to make a plea for careful consideration of the process by which employment and training policies and programs are developed and implemented.

A Commission such as that on Workforce Quality naturally tends to look for recommendations for programs and policies which can immediately put into action at the national level. This has been the approach in the past: Commissions recommend programs which are, to some degree, legislated and implemented, e.g., MDTA, CETA, YEDPA, JTPA. But then, when a few years after implementation we ask what do we know from those programs about what is effective in dealing with employment problems the answer has been, almost without exception, "very little." Indeed, I would argue (and will document below) that after over 20 years of employment and training programs we know almost nothing about "what works, for whom" in employment and training programs. It is time for the Commission to call attention to the process by which employment and training policies are developed and implemented to see if we cannot put ourselves in a better posture to learn from experience with these programs so that in five to ten years another Commission is not faced with the conclusion that little is known about what works or doesn't work.

I believe that a process can be developed that will lead to more systematic learning from experience and to better programs. The approach is simply that of staged development. Program ideas start from research on the character of the employment problems for specific groups, in given places and times. Below I review some of this sort of research with respect to youth employment problems. The research generates ideas about what sorts of programs might help ameliorate problems and this should lead to a pilot project program embodying the idea. This pilot project should be rigorously evaluated as it is implemented and after. On the basis of this evaluation, if the program appears basically effective, the program concept should be replicated more broadly, i.e., in different sites and with new groups, once again with a rigorous evaluation. This evaluation will permit a second assessment of effectiveness and further adjustments in program details to attempt to improve its effectiveness and assure that is applied to the appropriate groups, i.e., learning about what works for whom will allow allocation of resources for maximum effect. Then the program concept is ready for national legislation and implementation and, equally important a sound base of experience is available so that technical assistance may be provided to those who must now implement the national program (even when implementation is essentially at the local level following national guidelines).

This may all sound overly formal and slow as a process for developing programs and perhaps even infeasible. But we have a good example of an area in which such a process has unfolded, though not entirely as a preconceived procedure. That is the process which led up to the passage in the Fall of 1988 of the Family Support Act. Research began in the early 1970s leading to the National Supported Work

Demonstration in the late 1970s. That project, with a rigorous evaluation, showed that an employment program could be effective in raising the employment of women on AFDC. The MDRC state work-welfare demonstration/experiments tested other employment and training strategies for this group and showed them to be effective in many different settings, always with rigorous evaluation. MDRC, Mathematica Policy Research and other groups pulled this experience together showing how resources could be most effectively allocated to various groups in this population. This was fed into the legislative process which resulted in the Family Support Act.

A reviewer of an earlier draft of this paper argued that the emphasis on evaluation and on research was too "whimpy" an approach for this Commission which has to act on "what we know now." But if Commissions such as this continue to ignore the importance of assuring that the process of policy and program development is shaped better in order to learn from the experiences we have with employment and training programs, then future Commissions will have to receive to same message, we know damn little. In my view, therefore, this recommendation has the highest priority.

B. The Major Issue: How to Deal With the Employment Problems of Inner City Dropouts

The employment problems of blacks, and the employment problems of youth in general, are particularly concentrated among those males who have dropped out of high school and live in the inner city. The major question is what role the training system can play in ameliorating the problems of this group.

1. What can be done to reduce school drop outs?

In general, this has been perceived to be a problem for the educational system to resolve. However, in the past there have been a number of initiatives involving employment and training programs which have been viewed as potentially contributing to a reduction in school dropout rates. One relatively new initiative which deserves careful attention is the Summer Training and Education Program (hereafter STEP). This program (reviewed above) seeks to provide educational experiences during the summer months for minority, at-risk kids aged 14-16 in order to reduce the losses in verbal and mathematical skills, which occur for these groups during the summer months. Participants in this program have wages paid to them through the Summer Youth Employment Program and spend part of their time in academic instruction and part of the time working in summer jobs. In the pilot demonstration phase, this program is being carefully evaluated with random assignment to control groups. The initial findings of the effects of this program on the verbal and mathematical skills at the end of the summer of training were encouraging. The program is in the process of being replicated and spread to more sites, but in these new sites there is no evaluation component.

At the same time, in response to changes in the legislation in 1986, the Summer Youth Employment Program has had increased remediation as part of the program in many sites. However, there appear to be no plans to evaluate the effectiveness of this increased remediation element either. It is important for the Department of Labor to generate rigorous evaluations both of the expansion of the STEP program and for remediation efforts under Title IIb in general, to seek to determine how effective remediation in these program contexts is in improving both the verbal and mathematical skills of the participants over the long term and ultimately their employment as well. While test scores may be raised in the short run, it is important to determine whether those gains are sustained over the long run and if they are translated into better employment experiences.

2. What Can Be Done to Increase the In-School Employment Opportunities of Black Youth?

As noted above, a major difference in employment between black and white youth has been the emergence in the 1970s and 1980s of an increase in in-school employment for Whites but no such increase for Blacks. In light of the research evidence cited above, which suggests that higher in-school employment is correlated with higher employment and wages after school, these differences in in-school employment may have long term consequences reflected black-white differences in subsequent employment experiences.

The experience under the Youth Incentive Entitlement Pilot Projects would seem to indicate that a large part of this difference between black and white in-school youth employment was due to the absence of opportunities for the black youth since, under that project, when all the youth in the district were guaranteed a job the employment-to-population rate for Blacks became equal to that of whites. However, the early termination of the project and problems with its evaluation prevented the determination of whether the in-school work experience would be translated into long term improvements in post-school employment. A new pilot project, with a rigorous evaluation, should be mounted to seek to determine whether employment of youth while still in school can be increased, e.g., through wage subsidies, and what its long term effects would be.

Careful attention should be paid to what has been happening in particularly tight labor markets. Have the differentials in in-school employment between blacks and whites tended to narrow sharply as the labor market has gotten a good deal tighter? The data for 1988 cited above suggest that this may be the case nationwide in the last year but more detailed analysis of particular areas where labor markets have been tight for a long time would be useful. If sustained tight labor markets effectively remove differentials in in-school employment then special projects should be brought on line only when markets slacken.

3. What Can Be Done to Make Employment and Training Programs--Basic Education and Skills Training--More Attractive to Inner City Youth?

Most basic education and training programs (as opposed to direct work experience or employment programs) have had difficulties recruiting inner city minority youth, even in situations where unemployment rates are quite high. It appears that the programs are believed by such youth to be programs for "losers" and simply participating in such programs may label the youth as "losers." As noted above, there is some empirical evidence that tends to lend support to this belief. Some careful investigation needs to be done, and some innovation in programming, perhaps, undertaken, in order to make these programs more attractive to the youth who appear to be in the greatest need of them.

4. How Do the Problems of Minority Youth Employment Relate to the Drug and Criminal Activity in These Inner City Areas?

While the media picture of the inner city is one in which drugs and gang activity predominate, and there is a lot of anecdotal evidence about the opportunities for youth in the inner city to make large sums of money in these activities, there is, to my knowledge, very little, if any, systematic information about the extent of involvement in drugs and crimes for the broad group of the low-income black youth in the inner city. It would appear that a high priority should be put on attempting to gain such systematic information. It would seem important to know these facts in order to assess whether employment and training programs are likely to be able to "compete" with such alternative activity and to determine whether there are changes in the design of employment and training programs which would make them more effective in the context of high drug and crime situations.

C. Issues Requiring Intensive Research, Program Innovation and Testing

1. Spatial Mismatch

As we noted in the review of evidence, increasingly there seems to be indications in the research that a substantial part of the problem of employment for black youths is related to the suburbanization of jobs, at least in several of the major northeastern cities. In the 1970s it appears that jobs moved from the center city to the suburban ring and that this movement made it harder for black youths to obtain employment.

The Department of Labor should support research to further investigate the extent and nature of the spatial mismatch of jobs and inner city low income persons.

The first question which deserves further careful research is, just how extensive was this problem of loss of job opportunities for inner city youth through the movement of firms to the suburban ring? Is this a phenomenon limited to a few big cities, or is it fairly widespread? Has the experience of the 1970s continued on into the 1980s?

The second question, and a quite important one, is this a situation which persists as the SMSA labor market tightens, or does the tightening of the labor market lead to efforts, both by employers and by the inner city youth to make connections?

The third question is: if indeed it appears that this spatial mismatch is a significant factor and persists in tight labor market situations, what programs can be devised which can alleviate this disequilibrium situation?

The first consideration which comes to mind is, of course, is the problem of residential segregation. It appears that this has been a major factor in preventing blacks from moving into the suburban areas where jobs are growing. Programs dealing with residential segregation are not exactly in the purview of the Department of Labor, but at the same time, if this is a fundamental factor in the employment problems of black youths, then it should be recognized and the Department of Labor should lend its support to any efforts to deal with residential segregation.

Second, is the question of transportation. If it is not possible for black families to move near the jobs, then at least it should be made more possible for them to travel to those jobs. Therefore, some investigation of programs relating to transportation of workers from the central city to the suburban fringe would make sense.

A third possible area for program innovation is in the area of job search. Some of the disequilibrium may be due to inefficient search for jobs by black youth, and specially designed programs to make them more aware of opportunities on the suburban outskirts, and to make employers more aware of the availability of the supply of black, inner-city youth, could be important.

A fourth possible area for program innovation has to do with school-business connections. Although there has been a lot of rhetoric surrounding some school-business connections, careful reviews of the actual experience suggests that they have had limited impact. However, some attempts to stimulate school-business connections, particularly between businesses located on the suburban outskirts and inner city schools, would be worthy of further investigation.

2. The Skills Mismatch and Literacy Issues

In the past few years we have heard a great deal about the problems of illiteracy in the work force and concerns about growing international competition and the evolution of technology in the directions requiring higher levels of literacy. This is combined with the observation that those population groups with the lowest academic performance are going to be an increasing proportion of all new workers. Thus some argue skill requirements demanded will be going up while skill qualifications of new entrants will be going down - thus, the "skills mismatch" or the "literacy problem." These concerns have been widely cited as creating an imperative for new education and training initiatives.

In the late 1950s and 1960s there was a similar concern about the changes in technology and the inadequacies in the labor force. Indeed, to a degree, it can be argued that the original labor department training programs, The Manpower Development and Training Act, arose from those concerns. However, at the same time we had the National Commission on Automation, which, after a careful review, concluded that concerns about automation leaving large sections of the labor force unemployable were not realistic.

It would seem, therefore, that a careful look at what can actually be said about changing job requirements would be timely and important. That is, rather than simply accepting sweeping conclusions about the levels of literacy required for productive employment over the next 20 to 50 years, some systematic investigation should be under taken to better determine the factors which are likely to influence the changing requirements of jobs over the next decade and their relationships to the education and training needed in the labor force. A great deal of resources can be put into basic education efforts on the presumption that without such efforts large segments of the labor force would be unemployable. Whether this level of resources and this activity are necessary is an important question to attempt to address.

In the mean time, given that expenditures are going to be made on remedial education efforts in training programs, a current debate, which deserves careful attention, is whether such literacy efforts should be undertaken sequentially or concurrently with skill training efforts. Several current programs in the demonstration stage (Job Start and Minority Female Single Parents Programs) have yielded information which highlights this issue. Some local sites have strongly emphasized providing literacy training prior to skills training while others attempt to meld the two together concurrently. A careful look at which of these appear to be most effective for which types of groups is an important issue if remedial education is likely to become a major and widespread component in training programs.

Third, the emphasis on the need to raise verbal and mathematical performance has led to an emphasis in programs on increases in test scores and/or attainment a high school diploma or a GED. While it has been shown that in the population higher test scores and high school diploma or GED are associated with better labor market performance, I know of no evidence that bears on the question of whether changes in test scores or diploma or GED induced by a program are, in fact, translated into better labor market experiences later. Some evidence to date suggests that induced short-term gains in test scores tend to disappear over time. Longer-term followups and careful evaluations are critical for understanding whether these basic education programs are effective beyond simply short-term gains in test scores. Careful attention should be paid to systematic studies of whether basic education programs within the training context which raise test scores and GED attainment (e.g., The Job Corps, Job Start, STEP) really do have long-term effects, both in terms of sustained test score and in terms of translation of those increased test scores into differences in employment capability.

Fourth, the literacy issue interacts with the characteristics of the Job Training Partnership Act (JTPA) in an important way. The emphasis on performance standards through the JTPA has pushed the program operators at the local level to select those trainees who are most likely to succeed in getting employment, referred to as "creaming." More concretely, it appears that increasingly the training programs themselves have set up minimum literacy standards so that those with weak test scores are being screened out of the skills training programs. Thus, the emphasis on literacy may have inadvertently led to a worsening of the skill training opportunities for black males (and other disadvantaged) at the same time that people are talking about the increasing need for basic skills, the government training programs have been moving away from the populace that appears to most need help in obtaining those skills. I understand the general problem is currently being addressed in the context of amendments to JTPA legislation, but particular attention needs to be paid to the role of test use and test criteria for program entry into JTPA and other employment and training programs.

This problem of test screening feeds back into the issue raised above regarding concurrent or sequential remediation. It may, indeed, be that basic skills remediation is most effectively accomplished when it can be combined with the kinds of skills training which motivates disadvantaged persons to become involved in training efforts. Thus, sequential structures combined with test screening may squeeze out many who could benefit from combine basic education and skills training.

Finally, with regard to literacy, is the very broad issue of how the basic education efforts of the employment and training system should relate to the school systems. In some sense, the employment and training system is being asked to fill a function that the schools should be fulfilling but have failed to do so.

D. Broad General Considerations

In addition to talking about specific types of program interventions, it is important to consider issues regarding the general organization of the employment and training system.

One of the deep problems of the system, which arises again and again, is that of focussing resources on those segments of the population who are in most need of training assistance without at the same time stigmatizing these population groups. We hear increasingly the old phrase, "A program for the poor is a poor program." There is pressure in many quarters to make all social programs "more universal." The question is, however, whether one can create "universal programs" where there is a reasonable assurance that poor people will, indeed, obtain a fair share of the resources provided in such programs; poor people tend to be quickly squeezed out by the more aggressive middle class whenever resources are open to both. What is needed here, then, is development of ideas about how to structure employment and training programs that will, indeed, be more universal in character and yet will not move in a fashion to reduce the likelihood that poor and minorities will have access to the resources provided by the program. Developing models of such organizational structures and then testing them is an important priority for the future development of the employment training system.

The second major issue is the relationship of the employment and training program to the educational system. The employment and training system is, in large part, trying to do what the education system should be doing, but for some significant segment of the youth population it fails to do. Yet the employment and training system has not attained stability of funding, professionalization of staff and delineation of authority, in short, institutionalization of the sort that has given the educational system its accepted place in the mainstream of American life. As a result, in most communities, organizations involving employment and training are considered marginal. The educational system, on the other hand, should not be taken as an exact model for the institutionalization of the employment and training system since it has not yet found an effective way to prepare a substantial segment of the youth population for later employment and often proves heavily bureaucratized and resistant to reform.

There have been periodic attempts of employment and training programs to involve the school systems as part of the training effort with regard to youth, but these efforts have, in general, been judged a failure, perhaps because the incentives for the school system to participate are simply too weak relative to those general incentives bearing on the education system as a whole. The youth the employment and training system has been dealing with are those which the educational system is, in most cases, all too happy to get rid of.

It is time, I believe, for a thorough-going study of the roles and relationships of the education and employment and training system. We have had separate studies of the educational system, the vocational/educational system and the job training system, but rarely have we had attempts to look systematically at all of these institutions and programs and their inter-relationships (and apparently we should add in here community colleges which have become increasingly involved in elements of training similar to that of the employment and training system).

Some of the problems of coordinating the educational system and the employment and training system undoubtedly derive from the differential structure of authority and financing in the two systems, with the educational system largely controlled by local authorities and financed from local and state resources, and the training system largely controlled by state and federal authority and funded from federal funds. It has been pointed out that the movements from CETA to the JTPA, with the increased emphasis on the private industry councils and the service and delivery areas have tended to move the authority structure of the employment and training system closer to the local level. Some of the interesting proposals for major reorganization of the system building around the PICs and SDAs (Osterman 1988) deserve some attention.

One very important role that the federal government can play in the employment and training system is through fostering adequate evaluation of program activities and dissemination of the results of those evaluations. I have already outlined above the elements of a better process of program and policy development. As concluded above, we have had over 20 years of employment and training programs, and yet we know relatively little about what works for whom because little effort was put into funding and implementing reasonably designed evaluations of the effects of these programs. In the last few years there have been increasing efforts to move in the direction of better evaluations of employment and training programs, so we are beginning to learn a bit more about what works and what doesn't work. Still, it appears that sustained effort in this direction requires pressure from the federal government. State and local governments appear to have limited interest in careful evaluations, as well as less expertise in how to design and implement them. An important part in fostering better evaluations is to provide substantial leveraging funds in order to encourage local programs to participate in rigorous evaluations. The knowledge generated by such evaluations benefits a much broader community and therefore it is sensible to substantially augment local funds to ensure participation in such evaluations.

The federal role should also involve substantial technical assistance to localities in a more decentralized job training system. Thus, a central federal group encouraging evaluations, obtaining results and disseminating them through technical assistance could enhance a more decentralized training system, permitting local adaptation of configurations of programs that seem best to suit the populations and situations of those local communities but at the same time taking advantage of a much broader base of knowledge generated through the coordinated efforts brought about by the central federal agency.

Such a central federal agency could also encourage the development of programs in a more systematic way through a series of staged tests of alternative models, accompanied by careful evaluations with long-term followups, moving from early pilot projects through secondary testing on a broader basis before proceeding to nation-wide programs, per se. As described above, this is what we have seen happen in the work/welfare area (although not consciously organized as such).

More attention should be paid to the question of adjusting the mix of employment and training programs to changing aggregate economic and local labor market conditions. While there has been a lot of variations in the level of training program activity in local areas related to fluctuations in federal funding and emphasis, this has not been done in any conscious way that recognizes that the needs for training are liable to change as a given labor market moves through the business cycle, or is subject to long-term structural changes.

It is important to try to determine not only when to start up programs but also when to close them down because the services they provide are no longer appropriate for the local labor market conditions.

E. Some Specific Program Initiatives

Aside from the broad considerations outlined above, we can focus more narrowly on specific known programs which deserve continued attention. First, the occupational skills training programs appear on the evidence to be effective in improving the employment of young black males.

The evidence for the Job Corps is persuasive, and on the basis of that evidence it certainly deserves to be continued and perhaps expanded. There are questions about which of its components are most important to its success which should be investigated further.

The Job Start Demonstration Project deserves very careful attention, since it is an attempt to carry out occupational skills training and some remediation in a non-residential setting. A carefully designed evaluation will yield estimates of the impact of this program and sustained federal support and expansion of this type of program should depend on the results of this evaluation.

The Summer Youth Employment Program seems to have sustained political support, so the major effort should be to try to shape the use of these resources in the most productive way. One way that they have been used recently is in the demonstration STEP Program. The early results of the rigorous evaluation of this program of combining summer work with academic programs is encouraging. Expansion of that program is currently occurring but without adequate evaluation of its impact. Careful evaluation of its impact should be part of the process of deciding whether further expansion of this program is warranted.

Finally, *one proposal that deserves careful study is that of instituting a training tax to be used through industry councils to support training by the industries themselves and by vendors.* There is some experience with attempts to use such training taxes in a number of countries, and a first step would be to try to pull together in a careful and systematic way what can be learned from the experience of these countries about the effectiveness of such training tax schemes and the kinds of problems which are likely to be encountered.

NOTES

1. Fortunately, there are a number of excellent studies of youth employment problems which have been developed in the early 1980s. The review which follows draws heavily on these studies. References are: D. Ellwood and D. Wise: "Youth employment in the seventies: The changing patterns of young adults;" NBER Working Paper No.~1055, National Bureau of Economic Research; R. B. Freeman: "Why is there a youth labor market problem?", in B. E. Anderson and I. V. Sawhill (eds.), Youth Employment and Public Policy; Prentice-Hall, 1980; R. B. Freeman and D. A. Wise: "The youth labor market problem," in R. B. Freeman and D. A. Wise (eds.): The Youth Labor Market Problem: Its Nature, Causes and Consequences, National Bureau of Economic Research Conference Report; Chicago, Ill.: University of Chicago Press, 1982; Congressional Budget Office: Improving Youth Employment Prospects: Issues and Options; United States Congressional Budget Office, 1982; R. B. Freeman and H. J. Holzer: "Young Blacks and Jobs: What We Now Know," in Public Interest, Vol. 78, 1985; R. D. Mare and C. Winship: "Racial Socio-Economics Convergence and the Paradox of Black Youth Joblessness: Enrolment, Enlistment and Employment, 1964-81," NORC Economics Research Center Discussion Paper, National Opinion Research Center, 1983; and A. Rees: "An Essay on Youth Joblessness," in Journal of Economic Literature, June 1986. Much of what follows is based on the work in C. Betsey, R. Hollister and M. Papageorgiou. (eds.) Youth Employment and Training Programs: The YEDPA Years, National Academy Press 1985.

2. There are two major reasons why the unemployment rate is not the best indicator of employment problems for youth. First, as with the rest of the population, the unemployment rate for youth is taken as the ratio of unemployment to the labor force. Whether individuals are counted in the labor force depends upon whether they say they are looking for work. The phenomenon of discouraged workers (that is workers who have looked for work for a period of time but who have become discouraged about the prospects of obtaining work and stopped looking) is likely to be particularly severe in the youth population. Ignoring discouraged workers tends to understate the size of the labor force and therefore to understate the unemployment rate. Secondly, and perhaps more importantly, the concept of unemployment in the school-age population is ambiguous. Young people can be enrolled in school but still say that they are looking for work and if they do not find a job are counted as unemployed. This component of youth employment statistics is substantial. For example, almost half of the 1978 teenage unemployment was shown to be generated by youths who were enrolled in school. For these reasons, then, it seems more sensible to focus primarily on the employment-to-population ratio as a measure of the degree of employment problems.

3. The years 1957, 1964, and 1978 were selected because in each of these years the unemployment rate for white males aged 35-44 was an identical at 2.5 percent and the business cycle was about at its peak; 1984 was selected to provide a view of youth unemployment during the recovery and 1988 for most recent figures.

4. The years 1957, 1964, and 1978 were selected because in each of these years the unemployment rate for white males aged 35-44 was an identical 2.5 percent and the business cycle was at its peak. In 1984, the rate of unemployment among white males aged 35-44 was 4.6 percent.

5. The years 1964 and 1978 were selected to provide consistency with other tables in this chapter. Appropriate data were not published in 1957 (or earlier years). Data for 1981 show the early effects of the recession and data for 1988 give a picture of the current situation.

6. In this discussion of Tables I.3 we used statistics for black youths rather than for nonwhite youths. This reflects the categorization used in the published statistics.

Federal statistics for recent years generally divide the population by black and white and include counts for the total population (so nonwhite statistics can be computed). For earlier years it is often the case that only statistics for whites and nonwhites were published. It is thus impossible to produce long time series (e.g., 1950-1980) that describe the black youth population. Nonetheless, the nonwhite statistics, while less than ideal, do capture much of what is important since blacks constitute the vast majority of the nonwhites in the United States. In 1980 the nonwhite population included: 26.5 million Indians, Eskimos, and Aleuts; and 6.8 million persons whose race was classified as "other."

7. See J. P. Markey "The Labor Market Problems of Today's High School Dropouts" Monthly Labor Review June 1988.

8. The years 1957, 1964, and 1978 were selected because in each of these years the unemployment rate for white males aged 35-44 was an identical at 2.5 percent and the business cycle was about at its peak; 1984 was selected to provide a view of youth unemployment during the recovery and 1988 for most recent figures.

9. See T. Nardone "Decline in Youth Population Does Not Lead to Lower Jobless Rates" Monthly Labor Review June 1987 for more details.

10. A much fuller review of the literature and discussion of the various factors is provided in C. Betsey, et al., op. cit.

11. In Freeman and Wise, op. cit.

12. R. B. Freeman "Why is there" op. cit.

13. H. Bowers "Have Employment Patterns in Recessions Changed?" Monthly Labor Review February 1981.

14. L. Badgett "The Changing Industrial Structure of Black Unemployment" unpublished, Dept of Economic, Univ. of California, Berkeley, December 1988.

15. J. S. Leonard "The Interaction of Residential Segregation and Employment Discrimination" NBER Working Paper N.1274 National Bureau of Economic Research 1984.

16. See G. J. Borjas, R. Sousa, and F. R. Welch "The Labor Market Experiences of Young Men" Unicorn Research Corp. (U.S. Dept. of Labor Contract) November 1985; G. C. Cain and R. Finnie "The Black-White Difference in Youth Employment: Evidence for Demand-Side Factors" Institute for Research on Poverty Discussion Paper 848-87, Univ. of Wisconsin, October 1985; K. R. Ihlanfeldt and D. L. Sjoquist "Job Accessibility and Racial Differences in Youth Employment Rates" Georgia State University, undated.

17. See C. Reimers: "Labor Market Discrimination Against Hispanic and Black Men", in Review of Economics and Statistics, 1983; P. Osterman: "The Employment Problems of Black Youth", in Vice-President's Task Force, op. cit., Vol. II, 1980.

18. Ellwood and Wise, op. cit.; Mare and Winship, op. cit.

19. R. Meyer and D. Wise: "High-School Preparation and Early Labor Force Experience," in Freeman and Wise (eds.), op. cit.; W. Stevenson: "The Relationship Between Early Work Experience and Future Employability," in A. Adams and G. Mangum (eds.), The Lingering Crisis of Youth Unemployment. Upjohn Institute of Employment Research, 1978.

20. D. Ellwood: "Teenage Unemployment: Permanent Scars or Temporary Blemishes?"; and M. Corcoran: "The Employment and Wage Consequences of Teenage Women's Non-Employment," in Freeman and Wise (eds.), op. cit.

21. J. Ogbu, "Stockton, California Revisited: Joining the Labor Force", in K. Borman (ed.), Becoming a Worker. Ablex, 1985.

22. See E. Anderson, "The Social Context of Youth Employment Programs" in C. Betsey et al., op. cit. and W.J. Wilson The Truly Disadvantaged: The Inner City, The Underclass, and Public Policy, University of Chicago Press 1987.

23. A. Hahn and R. Lerman What Works in Youth Employment Policy? National Planning Associates, 1984.

24. For a discussion of these problems, see G. Cain and R. Hollister: "Evaluating Social Action Programs," in R. Haveman and J. Margolis (eds.): Public Expenditure and Policy Analysis, 3rd edition, Houghton Mifflin, 1983. For a description on a cost-benefit analysis which went the furthest in answering all these questions for a given program, see P. Kemper, D. Long and C. Thornton: "A Benefit-Cost Analysis of the Supported Work Experiment", in Haveman and Margolis, ibid.

25. See T. Fraker and R. Maynard, "The Adequacy of Comparison Group Designs for Evaluations of Employment-Related Programs" Journal of Human Resources Spring 1987 and R. LaLonde "Evaluating The Economic Evaluations of Training Programs with Experimental Data" American Economic Review September 1986.

26. Betsey et al., op. cit., p. 106.

27. The National Academy Committee's classification, which I utilize here, was:

> "1. Occupational skills training: to equip youths with specific occupational skills and knowledge as a prerequisite either to further training or job placement in that occupational field. (Examples...[are] on-the-job and classroom training in...welding, drafting, carpentry, health, and computer occupations.)
>
> 2. Labor market preparation: to improve attitudes, knowledge, and basic skills as preparation for entering employment. This category encompasses such programs as career exploration and world-of-work orientation and programs designed to enhance youths' general educational level and skills, thereby improving their future career possibilities. (Examples of the latter are basic - remedial - education...programs.)
>
> 3. Temporary jobs: to provide youths with employment and general work experience in temporary subsidized jobs, either full time or part time. (Examples of such programs include work experience programs and the Summer Youth Employment Program.)
>
> 4. Job Placement: to place youths in unsubsidized jobs. Services provided may include job-search assistance, placement, and follow-up activities."

28. See R. Meyer and D. Wise, op. cit.

29. See Congressional Budget Office: Trends in Educational Achievement and Educational Achievement: Explanations and Implications of Recent Trends, United States Congressional Budget Office, 1986.

30. A summary overview of the problem can be found in Government Accounting Office: School Drop-Outs: The Extent and Nature of the Problem (GAO/HRD-86-106BR), June 1986, United States Government Accounting Office.

31. An unusually rich perspective on the consequences of teenage child-bearing is presented in F. F. Furstenberg, J. Brooks-Gunn and S. P. Morgan: Adolescent Mothers in Later Life, Cambridge University Press, 1987.

32. For some discussion of this, among other issues relating changing family structure to job markets, see R. Lerman and T. Ooms "Family Influences on Transition to the Adult Job Market" Youth and America's Future: William T. Grant Foundation August 1988 as well as W. J. Wilson, op. cit., and G. Berlin and A. Sum Toward a More Perfect Union: Basic Skills, Poor Families and Our Economic Future Occasional Paper #3, Ford Foundation Project on Social Welfare and the American Future, Ford Foundation 1988.

33. See for example, Berlin and Sum, op. cit.

34. The strongest case for rising skill requirements in the future is made in W. B. Johnson, et al. Workforce 2000: Work and Workers for the 21st Century Hudson Institute 1987, more skeptical views are presented in H. M. Levin and R. W. Rumberger "Educational Requirements for New Technologies: Visions, Possibilities, and Current Realities" Educational Policy Vol 1, No. 3, 1987. An excellent review and balanced assessment of the issues can be found in R. Murnane "Education and the Productivity of the Work Force: Looking Ahead" in R. E. Litan, R. Z. Lawrence and C. L. Schultze, edits. American Living Standards: Threats and Challenges Brookings Institution 1988.

35. See "Summer Youth Jobs Program: Congressional Action Has Increased Emphasis on Remedial Education" U.S. General Accounting Office GAO/HRD-88-118 September 1988.

36. See Berlin and Sum, op. cit., but for some contrary indications see J. Bishop "Employment Testing and Incentives for Learning" Cornell University, Center for Advanced Human Resources Studies, Working Paper #88-12 and H. M. Levin "Ability Testing for Job Selection: Are the Economic Claims Justified?" in B. R. Gifford edit. Testing and Allocation of Opportunity, Kluwer Academic Publishers, forthcoming.

12. FACILITATING THE FLOW OF INFORMATION BETWEEN THE BUSINESS AND EDUCATION COMMUNITIES

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Performance Plus Literacy Consultants
(formerly with Public/Private Ventures)

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Facilitating the Flow of Information Between the Business and Education Communities

Jorie W. Philippi

There is a growing concern over the gap between the educational skill achievements of America's youth and workers, and those required for entry and retention in the labor force. Changing demographics, along with the constant restructuring and technological upgrades that keep American business competitive, have resulted in the imminent danger of a national workforce shortfall. Increasingly, employers are facing the reality of not having enough qualified workers to fill available positions. Where once employers had a surplus of qualified applicants and could replace a worker whose job performance or ability to be retrained was inadequate because of low basic skills, they now find that qualified, retainable entry-level and promotable workers are at a premium.

At the same time, school systems, whose primary job is transmitting those skills necessary for functioning in our society, are reporting the effects of shifting student populations-- namely, overall decreases in enrollment, lowered levels of skill attainment by students, and persistently high dropout rates (Committee for Economic Development, 1987; U.S. Conference of Mayors, 1988). Despite concerted attempts over the last decade to improve school performance, significant change has remained a slow and somewhat elusive process. Youth continues to drop out-- at very high rates in many urban areas; of those who do graduate, a disturbingly high proportion still do not come to jobs with the requisite math and reading skills. Thus, each year large numbers of youth are leaving the school environment, and entering the labor market, unprepared to carry out their jobs.

Up to now these youth have taken jobs which did not require much literacy, but which still provided sufficient wages for self-support. They comprise the 30 million members of our current workforce who are under-skilled, unable to be retrained because of their present low level of basic skills, and in danger of being displaced (Dole, 1989). At the same time, the low-skilled jobs which have been available to the bottom of the workforce now represent less than 40 per cent of all new jobs and are steadily disappearing. Companies report that only one out of five high school graduates who apply for a position is functioning at a basic skills level acceptable for entry-level hiring, and of those hired, only one out of three is retained for longer than 90 days. Turnover rates for entry-level positions are often quoted as being as high as 150-300 per cent.[1] At the same time, national unemployment rates have dropped to 5 per cent, and in many areas of the country are as much as 2-3 per cent lower than the national average.

The seriousness of this problem, and the potential short- and long-term economic ramifications of it, have caused both employers and educators to recognize the need to improve, increase, and intensify communication in order to achieve their interrelated goals. In an attempt to provide direction for meeting that need, the remainder of this paper investigates existing systems and levels of communication between employers and education/training communities here and abroad. Additionally, it makes recommendations for developing and refining the information exchange processes that will produce effective education for qualifying and retraining workers to meet current and future workplace performance requirements.

I. What has been the form and motivation for business involvement in publicly supported education up until the present time?

An early period of business leadership:

From the late 1800s through the 1920s, there existed a period of business leadership which defined the fundamental management principles and organizational structure of the emerging system of free, universal public education. The influence of business, specifically large manufacturers, on the developing comprehensive public education system was easily identifiable. It could be seen

- in educators' adoption of student ability grouping and differentiated performance standards (i.e., assignment of tasks to maximize individual and group production outcomes),
- in the organization of school management (i.e., top-down, centralized control; governance by a board of directors, headed by a superintendent or professional manager; clear division of management-- administrators, and labor-- teachers and staff), which mirrored the structure of business

organizations,

- and in the legislation enacted to create formal vocational education (i.e., reflecting the influence of of business in controlling the supply and demand of labor), (Meyerson & Zemsky, 1985; Useem, 1986).

In its early years, public education reflected and fed the nation's growth and prosperity as a manufacturing economy. The influx of immigrants into the cities during this time swelled public school enrollments and motivated business to actively pursue legislation that increased the availability of specific vocational training programs (to prepare for jobs in manufacturing, the trades, and agriculture) within the public school system (Grubb & Lazerson, 1974). Mandatory public schooling provided free education for the total citizenry and, in so doing, contributed to raised levels of general well-being and increased opportunities for upward social mobility for the average person. The manifestation of equal opportunity through education helped underwrite the "American dream" and thus indirectly motivated worker productivity for realizing personal goals and ambitions.

The business leadership shift from national policy level to localized involvement:

During the developing years of universal public education, business leadership activities implied a sphere of influence on a national or state policy level, in contrast to the localized nature of business leadership and involvement which characterized the next three decades. From the 1920s through the 1950s, business assumed a less vocal, but nonetheless active role in influencing the education community. During this laissez-faire period, business gave input to the education system primarily through extensive representation on local school boards. Changes in statutes governing the election of school board members required them to finance their own campaigns; in larger school districts, especially, this resulted in candidates who possessed wealth and who were members of the upper or managerial class (McMullen & Snyder, 1987). Consequently, school policy and operations decisions often promoted the viewpoints and interests of the business community.

A time of political unrest and distancing:

Several factors combined in the 1960s to distance temporarily the business and education communities. The reexamination of the roles of society's institutions, occasioned by the civil rights movement and the controversy over Vietnam, brought about changes in the nature of business-education relationships and created a decade marked by social activism and anti-private sector disenfranchisement. Collective bargaining by teachers and the active involvement of community groups in the decision-making processes of local education systems served to decrease the amount of business interest and activity in education policy at this time (Timpane, 1982).

A period of resumed intensity:

An intensified period of business education activity resumed in the 1970s and early 1980s. Encouraged by changes in federal employment and training policy which gave employers a larger role in local program planning, private employers renewed their communications with educators. They helped manage training programs and, concerned with the growing plight of the country's large school districts, again became actively engaged in education improvement efforts. The business community assumed roles in government-mandated education and training programs by serving on Comprehensive Employment and Training Act (CETA) policy councils (PICs). Business leaders who served on PICs helped implement training programs that targeted job placement for the unemployed and a growing number of lower-skilled youth. Business also responded to the international space and arms technology race by participating in science, math, engineering, and vocational projects instituted under the Carl D. Perkins Act (1984) and the Math/Science Bill (1984).

The contributions of business to education during this period included not only money and materials, but commitments of time and personnel as well. The information communicated to educators by business people at this time consisted of data on actual and projected occupational vacancies, plans and program ideas for facilitating maximal educational achievement of all students (especially in the areas of math and science to ensure continued international leadership and defense), and listings of placements to be provided for student part-time and summer positions.

Corporate efforts to influence the upgrading of public education at state and community levels during this period evidenced themselves in the founding of school-business collaboratives, such as the California Business Roundtable, the Boston Compact, and a variety of similar ventures (McMullen & Snyder, 1987; National Alliance of Business, 1987). Some of these involved business as representative members of Private Industry Councils; in others, business leaders served as members of local or ad hoc groups which emerged to plan for collaborative efforts.

Business leaders connected the reduced quality of education in many schools with the availability of fewer skilled workers, and the subsequent threat of losing America's international competitive position. This led to inquiries from business about what could be done to help reverse the situation (McMullen & Snyder, 1987). The focus of many of the business-education partnerships that resulted was to assist secondary students with the school-to-work transition process. This was accomplished by providing support programs for career exploration, job search, and employability skills instruction that would help students enter the workforce. Interim objectives to achieve these goals frequently addressed measurable improvements in school attendance, dropout rates, and graduate placement in post-secondary education. The role of business often was realized by the provision of activities designed to acquaint students with the nature of the world-of-work -- namely, career exploration days; field trips to, and guest speakers from local industries; participation in educational activities at local cooperating colleges; classroom practice in filling out job application forms, producing student resumes, and role-playing job interviews; and student placement in part-time jobs to "experience" work (Prager, 1980; Schilit & Lacey, 1982; U.S. Department of Education, 1984).

In response to business concerns over the dwindling ranks of qualified job applicants, more recent efforts have incorporated instructional time specifically dedicated to raising student skill levels, in some cases by providing students with business-financed incentives in the form of monetary rewards for grades and escrowed higher education scholarships (National Alliance of Business, 1987; U.S. Department of Education, 1984).

A new strand of activity called "Workplace Literacy":

Because of rapidly changing job requirements and skills deficits among members of the existing workforce, a second strand of business-education activity has evolved in the 1980s. More and more frequently the media carries stories about "workplace literacy programs," i.e., employer-sponsored remedial basic skills programs for employees. Business organizations are now providing basic skills education for their employees as an ongoing, integral part of employers' investment in employee training and development at an increasing rate, in order to meet their needs for qualified workers. For several decades many large corporations-- including Control Data, General Motors, Polaroid, and Ford Motors-- offered academic training to their employees, usually through tuition reimbursement plans for attending classes outside of work. At first, such programs were categorized as Human Resource Development and were frequently included as part of employee benefits packages (Fields, 1986). Over time, with the recognition of a declining skill level in increasing numbers of entering workers and the rising requisite skill level necessary to redeploy longtime employees, many of these companies found it more efficient to develop their own in-house educational programs, independently or with joint sponsorship from organized labor.

Research on efforts to improve employee literacy skills (collected from extensive military studies and private sector pilot programs), produced strong evidence that intense academic training on basic skills did not easily transfer to improved job performance because of the fundamental differences between academic and workplace applications of basic skills. Traditional academic reading can be categorized as "reading to remember information," while workplace applications primarily are those in which the worker uses readily available job print materials (such as manuals, regulations, or graphic aids) intermittently while performing a job task. The type of reading done on-the-job can be categorized as "reading to do" and utilizes reading processes for locating information and for using higher level thinking strategies to problem solve. Occupational writing processes differ, too. They place less emphasis on academic criteria like grammar and spelling and focus more on skill in organizing clear, readable products;

accurately summarizing events; and mastery of thinking skills which enable analysis, elaboration, and extension of written ideas. Workplace applications of mathematical processes for calculating information and for problem solving also go beyond the traditional basics of number concepts and computation skill-drill; competent workers need math proficiency levels that enable them to use math concepts to reason and interpret data.

Research demonstrates that the highest rates of transfer from instruction to improved job performance occur when basic skills are taught in the context of job simulations or activities (Diehl & Mikulecky, 1980; Philippi, 1987, 1988; Sticht, 1982). Developing programs of job literacy training that are built from the charts, manuals, and processes that workers use to perform tasks ("contextually functional curriculum") ensures that instruction will be meaningful to employees in terms of what they are already familiar with, i.e., their jobs. Using the existing "mental hooks" (schemata) derived from their work environment and experience to attach new information helps ease the incorporation of new knowledge into the old (Shoemaker, 1967; Fingeret, 1984; Farr, Carey, & Tone, 1985; Valentine 1985). It is important to note, however, that it is **not** the job tasks themselves that are the goals of instruction, but rather the basic skills needed by a worker to accomplish the tasks on a given job. Functional context workplace literacy curriculum emphasizes information processing. Instruction focuses on showing employees how they can perform the processes, on learning how to learn (Laster, 1985). By breaking processes into the procedural steps characterized by job task analysis and by providing direct instruction in thinking strategies, functional context workplace literacy programs enable employees to develop self-questioning and mental activity-monitoring patterns (metacognition) which help them to become independent learners who can recognize and correct their own processing errors. And, having the opportunity to practice the newly learned skills on the job every day in the same context in which they were taught helps workers retain new skills and continue to use them. If, in fact, workers have successfully learned the job-related basic skills presented in effective workplace literacy programs, the results should be evidenced in higher job accuracy, productivity, and employee retention/ promotion figures, along with lower accident rates (Philippi, 1988). Consequently, customized job-specific basic skills instruction for employees ("functional context workplace literacy") is now being encouraged and utilized with increasing frequency, as part of employee development and training programs (U.S. Departments of Labor and Education, 1988; American Society for Training and Development, 1988).

The development of such workplace literacy programs requires a combination of information and expertise from the fields of education and employment training. Larger corporations use in-house trainers, educators, and instructional designers to develop these programs (Business Council for Effective Literacy, 1987; Skagen, 1986). Smaller businesses are turning to community and technical colleges to jointly develop and deliver workforce literacy programs.[2] As this newly incorporated form of "basic skills training" for employees expands, the interaction and communication between the business and education communities will need to become more extensive in order to maximize its potential impact.

Spin-off business-education collaborative efforts in workplace literacy include investigations into the feasibility of using job-specific basic skills instruction in pre-employment and displaced worker training for JTPA-eligible populations. Using the vehicle of job simulations and job materials to teach remedial basic skills to prepare program participants to enter or reenter the labor market allows occupational training and education components to be taught simultaneously and thus shortens the length of time required for program completion. In several states, studies of such programs have begun in response to immediate regional needs for more qualified workers to enter targeted industries.[3] In addition, several school districts and youth employment programs have created models that incorporate job-specific basic skills applications into their secondary or basic skills curriculum to better prepare students for survival in the workplace. [4] A number of major educational publishing houses also are pursuing development of instructional materials for secondary, adult education, and employment training markets that focus on transferable job-specific basic skills (information-processing skills used in numerous occupational areas).[5]

II. How effective are current business-education communication configurations?

As noted in the previous section, business has become increasingly involved with the education community in a variety of ways during the 1980s. It is difficult, however, to make a "blanket statement" of the overall effectiveness of communicating business needs to educators. Many different levels and models of collaboration have been instituted between the business and education communities; and several of the workplace literacy models are too recent to have yet produced sufficient data with which to evaluate their long-term impact on worker eligibility and performance. Therefore, to convey a more accurate picture of the effectiveness of the current state of business-education communication, five general categories of collaborative activity have been identified and selected for examination individually. These are:

- school/business collaboratives (system-wide compacts, adopt-a-school programs, and student-focused school-to-work transition programs),
- programs utilizing Private Industry Councils,
- corporate and union-sponsored worker education programs,
- customized community, technical, and junior college education programs for local businesses, and
- business/education communication systems in other developed

countries.

School/BusinessCollaboratives: In their recent national assessment of school/business partnerships (*Allies in Education*, 1987), McMullen and Snyder report that almost a quarter of all U.S. public school districts are involved in some type of partnership activity with the private sector, and the movement appears to be still growing. A survey report from the National Center for Education Statistics, (February, 1989), states that the number of education partnerships in public schools rose from 42,200 in 1983-84 to 140,800 in 1987-88, with the more recent partnership figure representing direct service to 9.3 million students nationwide.

The National Alliance of Business (*The Fourth R: Workforce Readiness*, 1987) identifies six different levels of partnership involvement for businesses who form collaboratives with schools. These range from broadly defined activities that require large investments of resources with goals for policy setting and systematic educational improvements, to allocating moderate amounts of funding and personnel to assist with school management and staff development, to sponsoring special activities and incentives of donating specific materials or equipment. On all levels the impetus for involvement appears to come from business leaders within the community, who perceive their role as that of "giver" to the educational "receiver." Partnerships are usually entered into without expectations for direct, short-term benefits to business other than the promotion of these efforts in their literature and media ads as a means to demonstrate "good will." Anticipated short-term benefits to education are discrete improvements in students' skills and knowledge. In the long run, businesses hope to improve the quality of the future labor pool and develop better-educated consumers with stronger purchase power (McMullen & Snyder, 1987).

Given the wide variety of structures and approaches used in school/business partnerships, the process of examining the effectiveness of their intercommunication is facilitated by classifying them according to the focal point of their activities. Three major functional school/business collaborative classification categories that have been identified by McMullen and Snyder are: 1.) system-wide school programs, 2.) individual school programs, and 3.) individual student programs (usually targeting disadvantaged youth):

1.) System-wide programs are less prevalent than the others and require the highest level investment of business resources. They may focus on affecting all the schools within an urban district, (e.g. the Boston Compact), or within a state (e.g., the California Business Roundtable). They work toward institutional change and policy reform for improving public school performance, and require significant contributions from numerous members of the business community, as well as long-term commitments. Larger businesses, government agencies, and institutes of higher learning tend to be involved with larger school districts. Fourteen per cent of all school/business partnerships in 1987-88 were of this variety (National

Center for Education Statistics, 1989).

In system-wide partnerships, communication usually occurs at the highest organizational level between CEOs and Superintendents or State Department of Education Directors. This type of collaborative is generally formed in response to crises in school performance throughout the system. Initial activities often include a funded study to document baseline statistics of critical school performance measures, such as attendance, grades, dropout rates and post-school placement in work or higher education-- measures with which low ratings are frequently associated for large, urban, high poverty districts. Forty-five per cent of all schools involved in partnerships in 1987-88 were classified as "high poverty schools" on the basis of student eligibility for free or reduced-price lunches (National Center for Education Statistics, 1989). Communication between partners follows the baseline statistical study for a district, usually in the form of meetings and reports, for the purpose of goal-setting, program planning and implementation, and progress reporting.

The National Alliance of Business (1987) cautions that consensus on the critical nature of the problems and the setting of common goals are necessary to the success of the collaborative. Additionally, it recommends that the presence of a business intermediary, such as a Private Industry Council or Chamber of Commerce, greatly enhances communication by organizing and prodding local business into action. The intermediary agency can also help expand existing partnerships, and can assist in linking representatives from appropriate organizational levels to expedite collaborative decision-making processes.

2.) Individual school programs, often referred to as "adopt-a-school" plans, are the most common type of school/business collaborative. McMullen & Snyder (1987) report that 22 per cent of the 9,000 school districts surveyed by the U.S. Department of Education in 1984 had one or more adopt-a-school partnerships within their districts. This class of school/ business collaborative is loosely defined and may involve only limited or sporadic contact between partners for a specified length of time (e.g., one or two years), or may evolve into a long-term, comprehensive relationship. According to the National Center for Education Statistics, in 1987-88, 32 per cent of all school/business partnerships were individual school programs initiated by the school principal. Typical activities in 1987-88 included business contributions in the form of monetary rewards or scholarships(44 per cent), materials, such as computer equipment or use of facilities (14 per cent), visits by business people as guest speakers to assist with special classroom projects or programs (45 per cent), and sponsorship of student tutoring programs (12 per cent). In 73 per cent of all partnerships, business provided guest speakers, special demonstrations, or equipment (National Center for Education Statistics,1989). Communications in this type of program are usually conducted by a designated mid-management employee and the principal, sometimes with the addition of locally appointed oversight committee members. It is normally limited to initial contact for jointly determining education needs and forms of business responses, scheduling of activities, periodic monitoring and reporting of program features, and reports documenting program outcomes.

3.) Individual student programs focus on specific groups of youth. These may be high achievers, for whom business provides awards, scholarships, jobs, enrichment programs or donated equipment. Business also provides employability instruction and work experience (similar to cooperative education programs but of shorter duration) to average students who are unprepared for the working world. Another youth population often targeted for this type of program is the underachieving student, whose grades are lower than the academic potential he or she demonstrates on achievement tests. Business and higher education institutions frequently partner with schools in these programs to provide extra classes, mentoring, and jobs to motivate future success. Twenty per cent of the partnerships in 1987-88 were of this variety (National Center for Education Statistics, 1989). Specific content areas that are often targeted include: math or science, reading or writing, arts or humanities, civic or character education, and career awareness. Recently, a growing number of collaboratives have focused resources on youth in danger of dropping out, providing programs to encourage school attendance, graduation, drug prevention, and job placement. For 1987-88, the number of partnerships focused on this population was five per cent (National Center for Education Statistics, 1989).

All of these programs have a common goal of helping youth make a successful transition from school to work. The programs attempt to identify and remedy those deficiencies that would hinder entrance to the workforce. Most of these programs serve students during their junior and senior years of high school, hold special small classes to maximize individual attention, use employability skills curricula, and provide work experience. These collaboratives are often able to access additional federal funding through the JTPA because they target economically disadvantaged students who lack working parent role models and who are in need of jobs (McMullen & Snyder, 1987).

Communication between the business and school communities in student-focused programs is much like that described above for system-wide and individual school programs because individual student programs tend to operate within one school or district. Slight variations in communication occur when the programs are operated by community-based organizations outside the school, or when JTPA funding is utilized-- usually requiring additional record-keeping and reporting. Little or no evidence is reported of direct information about employer needs being communicated to educators, other than vacancy listings. Performance standards and workplace applications of basic skills necessary for retention and promotion are usually not communicated. (An exception to this is the state of Michigan, which has solicited input from major industries located within the state, through the Governor's office, as part of the development of an employment qualification test for graduating high school students.) The reason such information is rarely communicated may be because school/business collaboratives are viewed by business as interventions primarily to help students achieve initial entry to the labor force, and are only indirectly viewed as providing lifetime training for a quality workforce.

Programs Utilizing Private Industry Councils (PICs): Private Industry Councils (PICs) often serve as the intermediary agents that facilitate communication in school/ business collaboratives. JTPA regulations governing PIC membership mandate a composition of at least 51 per cent local business leaders, with the remaining representation to be drawn from education, labor, and the general community; this configuration should support communication between education/employment training providers and the business community. JTPA programs are designed to train or retrain potential or displaced workers to become more productive. Regulations specify that training include an education component for participants who are low level- or non-literates, or who have not yet earned a high school diploma or its equivalent. PICs generally contract with community-based organizations, proprietary schools, special service vendors, and local secondary and post-secondary school systems for training services. Payment for services is often contingent upon meeting performance standards, (e.g., specified numbers of participants successfully placed after training who remain employed for a minimum number of days). Two strands of information must be communicated to these education/employment training providers: predicted vacancies in the geographical area and academic and occupational entry-level skill requirements. Entry-level requirements for basic skills applications as they are used in the workplace have not generally been part of the information made available to providers of instruction. PICs, in varying degrees of efficiency, collect and make this information available to the providers.

Projected vacancies and requisite occupational skill levels are relatively easy for employers to identify and describe, and for providers to translate into specific training competencies and criteria. Continuous industrial restructuring and technological upgrades create the need for constant updating and communication of this information.

Traditionally, academic requirements have been defined as reading at or above the 8th grade level and possessing or working toward a G.E.D. or high school diploma. However, lower unemployment rates create the need to serve increasing numbers of participants previously classified as hard-to-employ, many of whom have literacy skills well below the 8th grade level. For many of these participants, completing the educational requirements can mean as much as 200 hours of school-type remedial basic skills instruction. Most participants really only want the occupational training, and have not been successful in previous academic learning situations; consequently, they frequently drop out of the programs before meeting this educational requirement. This, coupled with the growing frequency of inadequately prepared high school graduates who apply for entry-level jobs, and the overall decrease in numbers of applicants, indicates a need for business to reevaluate and redefine basic skills requirements as more than just minimally acceptable reading grade levels or levels of school attendance or a G.E.D. There is a need to communicate those specific workplace basic skills applications that are necessary for competent performance of job tasks-- for entry, retention, and promotion in the labor force. Alternatively, the business community is faced with extended JTPA training programs that do not train participants quickly enough to meet their labor force needs.

Corporate Worker Education Programs: For a number of years, large corporations have been providing educational opportunities for their employees. Usually packaged in the form of tuition reimbursements for courses taken away from the worksite, education benefits were often negotiated by unions and encompassed worker enrollment in job-enhancing studies on the levels of higher education or adult basic education. As the number of available qualified entry-level and retainable workers decreased, more and more businesses looked toward providing their own in-house remedial skills programs for their workers. These began with the assumption that the educational intervention should focus on the development of academic basic skills that previously had not been mastered. In a recent bulletin (1987) the Business Council for Effective Literacy reported that UAW negotiated agreements with Ford, General Motors, and Chrysler from 1984-86 totaling more than $320 million to establish basic skills programs for employees. Under these agreements, the corporations provide part of program funding and the balance was covered by deductions from wages to cover training costs. The majority of these programs operate under agreements similar to that of UAW-Ford, in which provision of all technical training is the responsibility of management and all other work-related and non work-related educational needs or desires of employees are addressed through a collaborative institution or agency, such as the UAW-Ford National Education, Development, and Training Center. Through programs developed or sponsored by such Centers, (like UAW-Ford's employee Skills Enhancement Program), workers are offered courses that provide not only basic reading or math to function in every-day life, but also give instruction in requisite skills for statistical quality control, computerized numerical control of machinery, and use of robotics on the production lines. Joint planning teams operate in major plants to analyze changing workplace and personal employee needs; and designated liaisons function as agents between the teams and local education systems to communicate those needs, (Elrod, Sloat, & Foreman, 1989).

Early in the 1980s, the communication from employer to outside or in-house educator consisted of the results of individual employee assessments administered to determine skill deficits and to plan individual courses or remediation, along with requests for reports of employee progress. Additionally, in performing needs analysis, job print materials (manuals, forms, and so on) were often evaluated to identify their readability level, which was then used as the basis for quoting requisite reading grade levels for specific job positions. Many corporations found that post-program academic achievement gains by employees frequently did not translate to significant positive changes in organizational records of productivity, job accuracy, and safety. Consequently, management began to explore more effective ways to use education to impact on improving job performance. Following the pioneer efforts of Polaroid Corporation, companies like Control Data, Traveler's Insurance, Onan, Aetna Insurance, IBM, and the major automobile manufacturers began to have in-house educators and instructional designers develop customized instruction to teach employees the basic skills they need to perform their jobs (Business Council for Effective Literacy, 1987; Skagen, 1986.) In these exemplary programs, company employee training and education specialists work together with instructional designers to analyze critical job tasks and identify the workplace basic skills applications embedded in them, then create curriculum from the context of specific job situations a vehicles for teaching the necessary basic skills for competent job performance. Using this process as an ongoing, integral part of organizational training provides a permanent communication loop between in-house trainers and educators for meeting current and future workforce requirements. It also allows for information input from line supervisors and competent employees who are interviewed and observed as part of the job task analysis procedure.

Customized Community College Education Programs for Local Businesses: Smaller businesses, and some mid-sized corporations, do not have the resources to dedicate to developing employee education programs. To solve this problem, they frequently turn to local community or technical colleges (or local branches of state universities), who provide customized job-related basic skills courses for their employees. Sometimes these courses are located at the worksite, sometimes not. Businesses often approach community colleges who have previously provided technical courses (e.g., blueprint reading) for their employees and who have an adult basic education department. The most effective communication models are used by those programs in which local businesses and college staff form a team to co-design, co-write, and oversee the implementation of customized curriculum to instruct workers in job-specific applications of basic skills, (rather than just having them select traditional off-the-shelf GED and Adult Basic Education materials for workers to use at a worksite classroom). In exemplary program models, such as the state-wide effort in South Carolina Technical Colleges, Rockford (IL) Community College, and Gateway (Phoenix, AZ) Community College (see Note 2 for others), a team is developed from college faculty and individuals from the firm's personnel department, (generally whoever is responsible for employee training). The team gathers information on employee performance and job requirements for basic skills, through needs analysis (employee testing and examination of organizational performance, productivity, accident records) and literacy audits (analyses of job tasks from employee and supervisor observations and interviews). This information is then used to identify critical job tasks and the basic skills needed to perform them, which then become the basis for curriculum development (and delivery) by the college staff. If the curriculum developed as a result of this process is needed by other area businesses, it is often "packaged" and made available by the college. The difficulties inherent in this process are that 1.) college instructors who are content-area specialists in either adult education or technical subjects have trouble adapting their area of expertise to combine content areas in the development process for a customized job-specific basic skills curriculum, and 2.) technological changes and upgrades can quickly make course content obsolete unless a system is devised for business to continually provide cooperating colleges with updated information on job content and requirements. The benefits of customized job-specific basic skills curricula are the high rates of skill transfer from instruction to job performance and the shortened duration time for courses. Because of the prior job knowledge participants bring to the learning situation, and because the functional context approach to developing curricula uses learners' job tasks as a vehicle for teaching workplace basic skills applications, gains are achieved more rapidly (40-60 hours per grade level) than in traditional basic skills programs (100 hours per grade level), (Philippi, 1987; Sticht, 1982). Retention of gains has also been demonstrated when a job-specific approach to basic skills instruction is used, (Sticht, 1982), because participants immediately apply and practice what they have learned in their daily job tasks. Because courses can be of shorter duration and still demonstrate lasting results, more flexibility in scheduling is feasible. Attending two-hour sessions twice per week for a ten-week period is far more likely to generate higher rates of participant commitment and course completion that longer, traditional (e.g. 100 hour) programs. And, because the goals of such courses aim at improving job performance, many employers now provide paid release time during work hours for employees to attend. By having college staff offer courses at the worksite in shorter cycles, course availability and appeal to employees increases.

Business/Education communication systems in other developed countries:

Because the state of a country's productive capacity and international competitiveness is directly linked to its education and employment training systems, it is important to consider and compare our own system to those of our competitors. The countries of Japan, West Germany, Sweden, and Hungary lend themselves to this sort of comparative analysis because they are all highly industrialized and yet represent a diversity of types of schooling, career preparation, and placement (George, 1987). In each of these countries, with varying degrees of control, the communication of business needs to the education systems is largely accomplished through national government ministries. Within their different structures and underlying philosophies are items worth considering for streamlining our country's flow of information between the business and education communities.

Japan's system is most nearly like our own in that an academic secondary education is more prevalent than vocational education. Similar to the U.S., schooling is divided into elementary (grades 1-6), lower secondary (grades 7-9), and upper secondary (grades 10-12). Attendance is compulsory to age 15. Unlike the U.S., Japanese education follows a somewhat inflexible curriculum, stressing the mastery of factual material through rote drill and memorization, and is highly competitive. Students often attend extra classes at private tutoring schools, or juku after school and on weekends to qualify for entrance into prestigious upper secondary schools, which are not free of charge (Leetsma, August, George, and Peak, 1987). Approximately 94 per cent of all students advance to upper secondary schools, and another 5 per cent go on to vocational training and work. Job referral is accomplished through effective school-based employment services, which play a significant role in matching non college-bound graduates with available jobs. The system is based on cooperation and trust between the upper secondary schools and employers. Business communicates its projected vacancies, and occupational and academic entry-level workforce needs to the Public Employment Security Office (operated by the national Ministry of Labor), which then relays the information to all the upper secondary schools. The schools which have traditionally supplied particular corporations with employees, and are unofficially ranked according to prestige of placements and resulting demands for enrollment. Employers are prohibited by law to have direct contact with students or schools, and must communicate and have vacancies filled by working through the PESO. Employers identify and articulate their needs to the PESO so that the school system can respond. Schools currently emphasize the teaching of basic attitudes about functioning effectively in an organization and the behaviors believed necessary for success in the Japanese world of work. These include a high level of general basic education, disciplined work habits, and group cohesiveness. The underlying educational philosophy focuses on individual effort, in contrast to the U.S. focus on individual ability. These philosophical differences are evidenced in the content and societal goals of education in each country's system. The curriculum in Japanese schools is uniform and rigorous for all students. It is understood that, given the same educational input, competition among individuals, (i.e., the effort they exert to achieve), will determine outcomes. Competition instills in learners the value of constantly striving to improve performance. This principle, along with instructional emphasis on group cohesiveness and effective functioning within an organization, prepares students to meet similar behavior and attitudinal goals in the workplace and in the larger context of Japanese society. (The Japanese school system itself "practices what it preaches" by effectively functioning within the society/ organization as a provider of the labor force which feeds the economic goals of the country.) In contrast, U.S. school curricula provide multiple levels and varieties of content, determined by the diverse needs, interests, and ability levels of individual learners. A student's performance is measured against his or her own ability level; the learner is only in competition with himself or herself. This philosophy of "filling one's potential" reflects the U.S.' historical view of the purpose of education: to better the human condition and to perpetrate the aggregate knowledge of the culture. While subscribing to this liberal arts, Rennaisance model upholds the societal goals of freedom of choice for the individual, it does little to provide educational outcomes that support the development of a skilled, cohesive labor force dedicated to a priority for achieving national goals for survival in today's international economy.

The value Japan places on its education system as tool for economic success is evident in its national support for the establishment and maintenance of education credentials and their employment/ recruitment policies and practices. The main responsibility for maintaining this structure of contacts with business and for assisting students with their job searches is borne by the schools (Leetsma et al. 1987, pp. 44-61). This appears to have a direct influence on the low rate of school dropouts, (less than 1 per cent).

West Germany's education system emphasizes vocational training and apprenticeship over academic secondary school. More than 75 per cent of the students receive vocational training and do not go on to universities. Schooling is free and attendance is compulsory from ages 6 to 18 years. Students must attend school full-time for nine years, and then at least part-time for 2 to 3 more years (George, 1987). The education system is based on a vertical structure, under which career paths must be decided upon early in life, (at the age of 10 years), and are more or less irreversible. Results of an examination play an important role in determining what type of secondary education may be pursued. The four levels of choice are:

- the hauptschule which terminates formal schooling at the equivalent of the end of 9th grade and prepares students to enter an occupation at that time.

- the realschule which is vocationally oriented and prepares students to continue their education in a higher level technical school for non-academic occupations.

- the gymnasium which is continued academic coursework and which is required for admission into the universities.

- the gesamtschule which equates to a comprehensive U.S. high school, providing additional academic skills training and selected vocational training courses, tracking students according to abilities. (This has been recently added to the system. It provides an alternative for those students who fail two years in succession at gymnasium and are dismissed. Too late to enter an apprenticeship, they were formerly abandoned by the system.)

The Federal Employment Services determine which vocational courses will be offered, and coordinate offerings with labor demands at regional levels. Until recently, Germany's system for developing apprenticeships and vocational training areas based on communicated needs from the business community provided an efficient model for collaboration of systems on a national level. Because of Germany's current levels of low economic growth, large numbers of resident foreigners holding work-permit type visas (Gastarbeiters), and high rates of unemployment (14 per cent), the balance of labor supply and demand has become unsatisfactory. Many students who finish apprenticeships or training remain unemployed; they are often required to participate in apprenticeships in occupations for which they have no career aspirations, rather than leave the system without obtaining any occupational certificate and be unemployable. As in the U.S., "creaming" of the most skilled job applicants who complete training is creating an increasing number of unemployed lower-skilled workers (von Dohnanzi, 1978). Germany is faced with tolerating a higher permanent rate of unemployment and now encourages students to participate in longer periods and higher levels of schooling and training. Despite the present oversupply of labor, the German apprenticeship system of education provides business with a workforce that meets behavioral, attitudinal, and performance requirements. This is the result of the experiential, contextually-based instructional methodology inherent in apprenticeship programs, which facilitates participants' functioning in a changing, technological workplace.

Sweden's education system has a large vocational element in its upper secondary schooling. Compulsory non-vocational school is provided for students ages 7 to 16 years. By the sixth year of school, career exploration is introduced into the curriculum, and includes specific information about occupational training and two-week visits to one or more private or public workplaces for observation (George, 1987). Municipal authorities are partners with the National Labor Market Board (Arbetsmarknadsstyrelsen). Through county-level labor boards, they work with the education system to provide programs at the local level to meet employers' needs. The number of openings for students in vocational schools, academic high schools, and universities is carefully controlled by the labor board and depends on labor market forecasts provided by business. The system operates on the assumption of direct communication, access, and control of educational offerings of the education community by the business community (working through the agency of the local and national labor boards. This includes the authority to generate special courses for basic work-life orientations as needed. Any sudden changes in supply and demand, which result in mismatches of students to the jobs for which they have been trained, is compensated for by municipalities engaging students in "temporary" relief work (i.e., public service) or obtaining private sector positions for them (approved by labor unions) which anticipate future vacancies (Rehn & Petersen, 1980). The concept of schooling as a means to fulfill the needs of business is integrated into the curriculum during the early years of formal education, thus becoming an intrinsic goal of student participation in the education system.

Hungary's education system reflects the state philosophy of subordination of the individual to societal needs. The state education system assumes responsibility for the up-bringing of the child; parents are merely individual administrators of state decisions and policies. There is an underlying educational theory that intelligence is acquired and not innate. Therefore, no selection process is considered necessary beyond the filling of societal needs through the creation of appropriate workers. As in all Eastern Bloc countries, there is early exposure to various forces of labor, and interest and respect for all occupations is encouraged under the "polytechnic principle." Compulsory school attendance is required from ages 6 to 16 years, and every student understands that the purpose of education and all careers that follow it is to further the state (Frank, 1984). Secondary school education is divided into three possibilities: grammar school, technical secondary school, and vocational school. The curricula is centrally set by government ministries; at both secondary and post-secondary levels, schools and programs are established or dissolved by the Party Ministry of Education, depending on needs for manpower in various occupations. The teachers in vocationally oriented programs are usually former mastercraftsmen. Graduates of vocational and technical schools receive a broad enough basic education that, like grammar school graduates, they qualify to enter any higher education institute on condition of passing an entrance examination. Graduates of these schools who want to continue their education traditionally apply to polytechnic institutes to receive additional certification. Two levels of certificate are issued: upon graduation, a "technician's certificate" is awarded; upon completing two years of work and passing a practical examination, a "skilled worker's certificate" may be earned. Job placement can be anywhere in the country where a vacancy exists (Braham, 1980). In Hungary, "there is no unemployment because the right to work is guaranteed by the government," (George, 1987, pg.3). Balanced against the lack of individual choice in careers and work locations is the pride, self-worth, and respect for all job titles as having equal value and status for reaching the economic goals of society. No one job is more prestigious than another; each worker in every job is valued for the contribution he or she makes. Because of this, workers can take pride in how they perform, rather than in what they do or do not do.

Although each of the above country's systems for communicating business needs to educators varies greatly from our own, certain elements of their procedures are worth pondering in light of the increasing numbers of dropouts and underqualified graduates of U.S. schools. Most obviously, the quality and timeliness of information that is communicated to foreign schools about the needs of business is more precise than in the U.S. because of central, federal control of the systems. Given the size of the U.S. labor market and our government structure in comparison to the developed countries described above, the tightly controlled education/labor supply and demand systems used abroad are not feasible for adoption in this country. However, regionally or at the State level, many of the strategies mentioned might be implemented. The school's function in these countries as placement and referral intermediary for those students not going on to college could be encouraged in the U.S. Building a structure for direct placement would provide a vehicle for continuous, mutually beneficial communication between the business and education communities. PICs or local business round tables could serve as agents to facilitate improved quality and quantity of information communicated. Additionally, the adoption of required school certification of individual student training and academic achievements applicable to the workplace (coupled with complementary "workfare" regulations) could motivate students to perform and to complete their schooling. And finally, State education agencies could support the early inclusion in curricula of career exploration and expectations for student assimilation into the labor force as adults. This would enhance student acceptance and pursuit of societal values placed on individual effort and on respect for competent workers in all occupations.

III. What are some recommendations for improving the flow of information between the business and education communities?

Some issues to address:

Existing school-business collaboratives are complex, varied models. They focus on a wide range of divergent target populations: secondary students, dropouts, employees, displaced workers, and so on. Their effectiveness is dependent upon the quality, quantity and timeliness of the information communicated between partners for the purpose of translating workplace requirements into relevant curricula for program participants. Oftentimes research on effective instructional design, methodology, and implementation remains unknown or ignored by program developers. This is due in part to the conflicting societal goals concerning the purpose of education. Since the beginning years of public schooling in the U.S., education has focused on amassing a core of commonly held knowledge, i.e. on learning to remember. Until recently, this fulfilled the needs of business for multiple skilled levels of employees by supplying a generally well-educated labor force. However, the upward spiral of technology in recent years has created a situation in which job requirements now change rapidly and demand higher skill levels for entry and promotability. The traditional goals of the education system no longer match the needs of the business community. Education still provides instruction for remembering knowledge from distinct content areas. Business needs workers who can apply information processing skills to an ever-changing workplace, skills that cut across content areas and are portable as job contexts for use continue to change. For example, students no longer need to simply memorize the contents of a chart on Civil War battles in their history books; instead they need to learn strategies for locating the information they need on that chart or any chart to solve task-related problems in the classroom, in the workplace, or in everyday living. In order for business/education collaboratives to become mutually beneficial, the purpose of education must be more broadly defined by society.

As jobs change and demographics change, students are becoming a harder-to-serve population. Motivation to stay in school or return to school is difficult to instill in learners who are at risk of being less than fully functional in our society. To entice learners to participate in education programs, content must be relevant to their needs. And those needs are undergoing change as well. For many years, unemployment rates were high; there were more applicants than there were available jobs. School and school/business collaborative programs to prepare learners to enter the workforce concentrated on enhancing the employability skills requisite to getting a job, i.e. resumes, applications, interview skills, and so on. Now that unemployment rates are low, there are more jobs than there are qualified applicants to fill them. The focus of programs needs to shift from preparing the job seeker to compete for a position, to preparing the job applicant to succeed in performing well enough in a constantly changing workplace to retain a position. Research demonstrates that this can be accomplished through redesigned programs to assist reluctant learners in qualifying for and remaining in the labor force that are the joint efforts of the business and education communities. The following recommendations suggest ways in which the current models could be made more effective through improved communication:

1. Encourage education community initiative:

Recent studies of school/business collaboratives indicate that one of the major deterrents to communication and program success is a lack of trust between partners (Waddock, 1986; Rezabek & Saul, 1986). Preconceived stereotypes concerning the value differences of the other sector partner contribute to this lack of trust. Paul Barton (1983) comments on this:

> The problem for the involved [collaborating] parties is an enduring tension which arises from the ambivalence between our larger visions of human potential (for which we advocate general education) and the here-and-now realities of the industrial society in which we live (for which we advocate up-to-date occupational preparation)."
>
> - Responding to Change: Occupational Preparation in the 1980s, pg.27.

Barton recommends that what would resolve this issue is an integration of occupational and general education, a refocusing of employability instruction to include more teaching of actual workplace problem-solving skills and teamwork methods which facilitate job retention. This expansion of the current school/business collaborative goals which emphasize school-to-work transition and narrowly focus on initial job acquisition, would enable partnerships to not only produce a marketable product (i.e., students qualified to enter the workplace), but also provide a "product warranty" for continued performance of graduates (job retention).

Two school/business collaboratives have pioneered models that reflect this refocusing of program goals and content:

Prince George's County Public Schools in Maryland surveyed local businessmen to determine the skills deficits perceived by employers among recent graduates who had been hired. Working with an Advisory Council for Business and Industry, made up of county business persons, the school's career education task force then gathered information on the workplace basic skills applications needed by entry-level employees for competent job performance and retention. They used the data to develop a set of workplace basic skills competencies and to rework instructional curriculum, which was reviewed by employers on the Advisory Council. Students who graduate from Prince George's County Public Schools now go to local employers with a guarantee for performance of workplace basic skills applications and with an Employers' Report Card. Any student performing below established and guaranteed skill standards is returned to the school for specified skill remediation, free of charge.

(Lendesy, 1989)

Youth Opportunities Unlimited (YOU) is a community-based organization that works with Cleveland Public Schools to facilitate successful school-to-work transition for juniors and seniors. The program currently operates in nine of the twelve city high schools. To expand their traditional employability skills, job acquisition curriculum to include skills needed for job retention after hiring, YOU has contracted to have instructional lessons developed that teach students general workplace literacy skills applications. Using the past placement records, they first identified the occupational areas in which the majority of recent program graduates had been hired. Literacy audits were then conducted at local businesses and industries representing each of these occupational areas. Critical job performance tasks for entry-level and promotable positions in each of these areas were identified by employers, then were task-analyzed to determine the workplace basic skills applications embedded in these job tasks that are required for competent job performance. Representative job print materials used in these tasks were collected from the job sites. Job simulations were then created, using these materials and information gathered from worker observations and interviews, to provide instruction in workplace basic skills, so that students can obtain hands-on experience with basic skills employers need in the context in which they appear on the job.

(Philippi, Public/Private Ventures, 1989)

In both these examples the education sector took the initiative to prepare students for continued success in the workplace, demonstrating capability for meeting employer's needs. In Responsiveness of Training Institutions to Changing Labor Market Demands, (1983), Pat Choate reports, "Employers will share information about their training needs only if there is a reasonable expectation that the training institutions can help fill those needs," (pg. 127). For this reason, it is recommended that the education community be encouraged to implement models like those described above to become the "giver" and not just the "receiver" in school/business collaboratives. Activities such as those described above would qualify for federal funding monies under Chapter I and Chapter II of the Hawkins-Stafford Public Law

100-297, (1988) which is currently used to provide compensatory education for students needing extra educational services, mostly in elementary schools. Sections 1103, b.,3, and 1405, 1531,b.,1,2,3, and 1541 and 1542 stipulate the use of these funds for developing and providing necessary services that would ordinarily not be available to them (such as those described above).

The strength of school business partnerships would be enhanced by this proactive approach because educators could assume the role of success agents. This is important because in many collaboratives, business intervention-- although welcome support-- delivers the unspoken message that the education system on its own has failed. Reinforcement for this attitude is seen in the urging from private sector spokespersons to revamp education management models so that they resemble corporate structures (Kearns & Doyle, 1988; Kolderie, 1987). Promoting the concept that business funds should be used to effect decentralization, teacher autonomy, and competition among individual schools connotates current "mismanagement" by the education community and does little to build the trust between partners that is required for good communication.

Additionally, by encouraging schools to assume the responsibility for obtaining information from the local business community and for redesigning curricula to reflect that information, three more benefits would result:

- Through involvement with information gathering and curriculum development processes, teachers would become more knowledgeable of the goals of instruction (i.e., to prepare students to perform as competent employees in the workplace), and consequently would become more flexible and adept at managing instructional delivery. This would create a potentially more effective learning environment and would encourage teachers to maintain and upgrade their professional teaching skills, namely curriculum development and adaptation, which can atrophy with constant dependence on off-the-shelf instructional materials (Apple & Teitelbaum, 1986).

- The teaching of workplace basic skills applications for information processing that transfer across many occupations would assist students in recognizing the importance of schooling and its relevance to their future, providing motivation for school performance and well as advance knowledge of employers' performance expectations.

- The addition of job retention skills (e.g., workplace "basic skills" processes for locating information, problem-solving, troubleshooting, teamwork, interpretation, reasoning, analysis, summarizing--see pp.8-9), to job acquisition skills (e.g., resume writing, interviewing, job applications) that are normally focused on in collaborative programs, plus movement toward issuing guarantees to employers for mastery of those skills by school graduates, would increase the authority of schools as job placement agents. And, like the education systems in other developed countries, it would enhance their holding power over potential system dropouts.

2. Develop and disseminate a model instrument that structures communication:

The quality of communicated information appears to vary directly with the type of benefit business receives and the specificity of the goals of collaboration. For example, when employers work with their own trainers and education specialists or jointly with community college staff to develop employee education programs, accurate information (e.g., about how basic skills applications are used to perform a particular critical job task) is transmitted and responded to in order to achieve a specific and immediate common goal.

When employers work with school systems, the process of communicating is less clearly defined. Goals may be agreed upon and stated, but they tend to merely extend the goals of the education community and not be aimed at producing direct benefits for the business community beyond recognition of their "good will" efforts through association with the partnership. A communication process needs to be developed for collaboratives to identify what is to be communicated and who the communicators for each of the partnering systems should be. To focus the communication and goals of school/business collaboratives to enable them to be mutually beneficial, it is recommended that a model be developed and made available for use. When employers work with PICs, the communicated information to JTPA program providers for training/education is specific. Program vendors are able to provide appropriate instruction, based on knowledge of projected labor force vacancies and targeted participant populations they receive. The procedure for communicating and the content and goals of programs are governed by regulations; and anticipated outcomes are clearly stated. PICs already function frequently as agents to facilitate the formation of school/business collaboratives. If a model were to be developed by the government to structure the use of PICs in an extended capacity, as definers and regulators of the process of ongoing communication between the business and education communities, partners would be able to form more mutually beneficial, longer lasting relationships. Local school districts (or individual schools) could be provided with guidelines for developing programs that met employers needs, then submit proposals to the PIC, which would be instrumental in the selection process for matching schools with local firms. Additionally, participating firms could be offered tax credit incentives.

To provide direction for operations of the partnerships, it is also recommended that a structured data collection instrument be designed for communication between partners in programs. During the past year, an intensified federal interest in workplace literacy has resulted in numerous grant awards, sponsored by the U.S. Departments of Labor and Education, to fund the development of business-education collaboratives. Their focal points include the process of curriculum development and evaluation of instructional impact on worker performance, both of which are contingent upon conducting appropriate communication between collaborating partners. To facilitate these efforts, the Departments of Education and Labor provided general guidelines and a recommended model for gathering information about requisite workplace basic skills applications in their joint publication, The Bottom Line (1988, pp.11-40). If these guidelines were to be fleshed out with more specific suggestions for adaptation to the various collaborative designs, a model could result that would better enable the communication of employers' needs to the education system and enhance the ability of schools to respond with effective programs.

Other existing prototypes for communicating also might be considered for input into a model that PIC-monitored collaboratives could use. The Colorado State Board for Community Colleges and Occupation has developed and published a prototype for assessing employer needs, based on a synthesis of effective models that were researched (Developing and Implementing a Program of Employer and Job Needs Assessment, 1985). Operating through a two-pronged survey effort, it considers potential student interests, needs, and capabilities, as well as employers and regional current and projected skill requirements and labor demands. The model has a flexible format for adjusting to local labor needs; and it outlines a system for creating a database and continuing data collection and updating without additional field surveys (Hill & McMurlyn, 1985).

The California State Council on Vocational Education has researched and evaluated five different models for coordinating JTPA training with education agencies to provide comprehensive services to participants.

Focusing on goal-setting, contracting, and program management strategies, they recommend state and local guidelines for working with public education systems (Rezabek & Saul, 1986).

These models could be expanded, refined, and combined for use as a resource tool with all levels of business/education partnerships.

3. Conduct further research on the role of federal government in business/educationcommunication.

More information is needed to determine how to involve enlightened corporation and education members of local communities in collaborative efforts. Local government might serve as a clearing house on information concerning potential partners. PICs might be used as facilitators, regulators, and monitors of school/business collaboratives; if this were to be done, their participation would need to be clearly defined and resources would need to be provided for them in the form of a model, guidelines for implementation and evaluation, a communication instrument for use in gathering data on employers' needs, and training for PICs to carry out these charges. Educators need additional training in the use of a functional context approach for developing curriculum and instruction (from information gathered from employers) that will prepare learners to perform as competent members of the labor force. A skills guarantee issued by the school to employers and feedback to the schools from employers might strengthen the responsibility and accountability of partners to each other. Funding mechanisms might be developed as incentives for participation, in the form of worker training loans (like student loans) or tax credits for business partners. Research could identify the appropriate facilitating role for government in each of these areas.

Summary

From the late 1800s to today, business has exerted influence on the nation's public education system. Employers have had input into its structure, operations, and regulating policies on local and national levels. An intensified era of business education activity has come about as the result of changes in federal employment and training policy which gave employers a larger role in local program planning. The business community often provides educators with data on projected vacancies, and facilitates academic achievement through participation in school/business collaboratives, which focus on school-to-work transition assistance. Recently, workplace literacy programs have emerged as a new strand of business/education partnership in response to the imminent labor force shortfall of qualified workers, resulting from demographic changes and technological upgrades.

Various models of business/education collaboration exist: school/business partnerships, Private Industry Council sponsored programs, corporate and union-sponsored worker education programs, and customized community college programs for local businesses. Improvements in these collaborative efforts would require educators to recast their role as receivers of services and resources from business to one of more active participation in translating workplace requirements into relevant curricula of schools. Examples of business/education communication in other developed countries are instructive regarding approaches to improving the quality and timeliness of the information about business needs communicated to the schools, and how schools might serve as placement and referral intermediaries for students who are not college bound.

Recommendations resulting from the literature and research review findings are that educators be encouraged to initiate a more proactive role in meeting the needs of the business community, that PICs be given a larger, regulatory role in facilitating partnerships and communication guidelines, and that more research be conducted to identify the appropriate facilitating role for the federal government.

NOTES

1. Statistics obtained from personal communications with McDonalds; Triangle Horseshoe Mfg., South Carolina; Walgreen Company, Illinois; and the American Bankers Association and its affiliates.

2. Customized job-specific workplace literacy programs have been developed to meet the needs of local businesses and industries by community colleges in Rockford, IL; Lakeland, IL; Highland, IL; Richland, IL; El Paso, TX; Phoenix, AZ; Meridian, MS; Spartanburg, SC; Greenville, SC; TriCounty (Pendleton), SC. Additionally, programs have been developed by Georgia State University, Pennsylvania State University, Indiana University (Bloomington), and the University of Minnesota.

3. Pennsylvania Task Force on Education for JTPA and Welfare Program Participants is currently investigating ways to combine required education program components with employment training by using job-specific basic skills materials. Mississippi Governor's Office Adult Literacy Program, in conjunction with the National Alliance of Business and regional SDAs, is attempting to coordinate the use of workplace literacy instruction among military, private sector, and JTPA-eligible populations. South Carolina's Governor's Workforce Excellence Initiative is in the process of developing a JTPA-funded statewide job-specific literacy program to serve JTPA -eligible unemployed,with assistance from the state's technical colleges and coordination by local business roundtables.

4. School districts in Prince George's County, MD, and in Cleveland, OH, are proactively seeking out information from local businesses about requisite workplace applications of basic skills, and are providing instruction in them for students in pre-employment secondary classes. Pilot programs being conducted by New York City's Youth Employment Program are also using workplace literacy task analyses to develop functional context curricula that combines occupational skills and basic skills training for participants.

5. Publishers developing job-specific basic skills instructional materials also include McGraw-Hill; Scholastic; Science Research Associates (SRA); Harcourt, Brace, and Jovanovich; and Simon and Schuster. Additionally, IBM and Apple Computer have dedicated departments to development and marketing of Adult Education/Employment Training courseware. Because publishers survive by projecting goals that must be met by educators and by translating appropriate research into practice; and because classroom instructional content of the education system is heavily influenced-- even to the point of being "driven"-- by the basal and textbook series produced by the major educational publishing houses, it is important to observe these signals of change and reflect on the impact they will have.

REFERENCES

Apple, Michael W. and Kenneth Teitelbaum, "Are teachers losing control of their skills and curriculum?" Journal of Curriculum Studies, Volume 18, No.2, 1986. 177-184.

Barton, Paul, "Responding to Change: Occupational Preparation in the 1980s," in Taylor, Robert, Howard Rosen, and Frank Pratzner (Eds.), Responsiveness of Training Institutions to Changing Labor Market Demands, Columbus, OH: The National Center for Research in Vocational Education, The Ohio State University, 1983. 25-35.

Braham, Randolph L. The Education System of Hungary, U.S. Department of Education Publication No. E-79-19139. Washington, D.C.: U.S. Government Printing Office, 1980.

Business Council for Effective Literacy, Job-Related Basic Skills: A Guide for Planners of Employee Programs, BCEL Bulletin, Issue No. 2, June, 1987.

Carnevale, Anthony, Leila Gainer, and Ann Meltzer, Workplace Basics, Alexandria, VA: The American Society for Training and Development and the U.S. Department of Labor, 1988.

Choate, Pat, "An Early Warning System: Reactor Comments," in Taylor, Robert, Howard Rosen, and Frank Pratzner (Eds.), Responsiveness of Training Institutions to Changing Labor Market Demands, Columbus, OH: The National Center for Research in Vocational Education, The Ohio State University, 1983. 127-130.

Committee for Economic Development, Children in Need: Investment Strategies for the Educationally Disadvantaged. A statement by the Research and Policy Committee, 1987.

Diehl, William and Larry Mikulecky, "The Nature of Reading at Work," Journal of Reading, Volume 24, 1980. 221-227.

Dole, Elizabeth. Comments made during installation as Secretary of U.S. Department of Labor as reported in "Reducing Illiteracy is Best Way to Beat Skills Gap, Dole Tells Congress," Employment and Training Reporter., Volume 20, No.20., February 1, 1989. Manpower Information, Inc. 571-572.

von Dohnanyi, Klaus. Education and Youth Employment in the Federal Republic of Germany. A study prepared for the Carnegie Council on Policy Studies in Higher Education, 1978.

Elrod, Brian, Cindy Sloat, and Larry Foreman. Comments made during personal interview at UAW-Ford National Education, Development, and Training Center, Dearborn, MI. June 2, 1989.

Fields, Ernest L. "Industry-Based Programs: A Growing Source for Adult Literacy Development," Lifelong Learning: An Omnibus of Practice and Research, Volume 10, No.10. 7-9.

Frank, H.Eric Human Resource Development: The European Approach. Houston, TX: Gulf Publishing Company, 1974.

George, Rosemary. Youth Policies and Programs in Selected Countries. The William T. Grant Foundation Commission on Work, Family, and Citizenship. August, 1987.

Grubb, Norton W. and Marvin Lazerson (Eds.) American Education and Vocationalism: A Documentary History, 1870-1970. New York: Teachers College Press, 1974.

Hawkins, Augustus F. and Robert Stafford Elementary and Secondary School Improvement Amendments of 1988, Public Law No. 100-297, April, 1988.

Hill, Michael and Clifford McMurlyn Developing and Implementing a Program of Employer and Job Needs Assessment. Mesa , CO: Colorado State Board for Community Colleges and Occupational Education, Denver. 1985.

Kearns, David T. and Denis P. Doyle Winning the Brain Race: A Bold Plan to Make Our Schools Competitive. SanFrancisco, CA: Institute for Contemporary Studies, 1988.

Kolderie, Ted "Beyond Business-Education Partnerships," in Restructuring Education, Research Report No. 902 for The Conference Board, 1987.

Lettsma, Robert, Robert August, Betty George, and Lois Peak Japanese Education Today. A report to the U.S. Department of Education, January, 1987.

Lendesey, Jacquelyn L., Prince George's County Public Schools, MD. Personal communication, February 22, 1989.

McMullen, Bernard J. and Phyllis Snyder Allies in Education: Schools and Businesses Working Together for At-Risk Youth. Philadelphia, PA: Public/Private Ventures, 1987.

Meyerson, Martin and Robert Zemsky Training Policies: Public and Private Reinforcement for the American Economy. Final report on the impact of public policy on education and training in the private sector. National

Institute of Education, Washington, D.C., 1985.

National Alliance of Business, The Fourth R: Workforce Readiness, Washington, D.C., 1987.

Philippi, Jorie W. "Matching Literacy Skills to Job Training: Some Applications From Military Programs," Journal of Reading, Volume 31, No.7, April, 1988. 658-666.

Philippi, Jorie W. BSEP/CSEP Reading Evaluation: A Study of the Effectiveness of the US Army's Basic Skills/ Career Skills Job-Specific Reading Program. A report to Army Continuing Education Services, USAREUR, Leimen, W.Germany, June, 1987. ERIC Document Reproduction Service No. CS-009190.

Prager, Audrey Education and Work Councils: Programs and Problems. A report to the U.S. Department of Health, Education, and Welfare. National Institute for Education, Washington, D.C., March, 1980.

Public/Private Ventures. Reports by Jorie W. Philippi from planning and conducting job-site literacy task analyses, curriculum development process, and technical assistance provided to Youth Opportunities Unlimited and the Cleveland Public Schools, School to Work Transition Program, November, 1987 through March, 1989.Philadelphia, PA.

Rehn, Gosta and K. Helveg Petersen. Education and Youth Employment in Sweden and Denmark. A study prepared for the Carnegie Council on Policy Studies in Higher Education, 1980.

Rezabek, Dale J. and A.Christine Saul Preparing Californians to Work: A Local Perspective on JTPA and Education Coordination. Sacramento, CA: California State Council on Vocational Education, October, 1986.

Schilit, Henrietta and Richard Lacey The Private Sector Youth Connection: Volume I: School to Work New York: Vocational Foundation, Inc. 1982.

Skagen, Ann (Ed.) Workplace Literacy, An American Management Association briefing, Chapters 2 & 5, 1986.

Sticht, Thomas G. Basic Skills in Defense, HumRRO Professional Paper No. 3-82, Alexandria, VA: Human Resources and Research Organization, 1982.

Timpane, Michael Corporations and Public Education in the Cities, New York Carnegie Corporation, 1982.

U.S. Conference of Mayors, A Status Report on Children in America's Cities, October, 1988.

U.S. Department of Education, The Nation Responds: Recent Efforts to Improve Education, Washington, D.C., 1984.

-- Survey of Post-Secondary Schools with Occupations Programs, National Center for Education Statistics, Washington, D.C., 1984.

-- Education Partnerships in Public Elementary and Secondary Schools, Survey Report No. CS89-060. National Center for Education Statistics, Office of Educational Research and Improvement, February, 1989.

U.S. Department of Education and U.S. Department of Labor, The Bottom Line: Basic Skills in the Workplace, Washington, D.C.: U.S.Government Printing Office, 1988.

Useem, Elizabeth L. LowTech Education in a High Tech World, New York: The Free Press, 1986.

Waddock, Sandra A. Some Criteria for the Successful Development of Public-Private Partnership, Working Paper No. 85-35, Boston, MA: Northeastern University College of Business Administration, 1986.

13. ISSUES IN FINANCING POST-SECONDARY EDUCATION AND TRAINING

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13. ISSUES IN FINANCING POST-SECONDARY EDUCATION AND TRAINING

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Introduction

More than $25 billion in financial aid is awarded annually to students attending post-secondary education. This aid is provided in a variety of forms, including grants and fellowships, loans, and service-related aid, and comes from many sources -- the federal and state governments, the educational institutions themselves, employers, and the philanthropic sector.

This paper describes how post-secondary education and training is currently financed in this country, discusses whether the aid system operates in an effective and productive manner, and suggests ways in which it might be improved. The first section of the paper examines the amount of aid that is available to individuals enrolling in post-secondary education and training programs, the proportion of students' costs of attendance that is covered by this assistance, and the distribution of aid according to student and institutional characteristics. The second section identifies a number of concerns relating to the ineffectiveness of the current system in meeting the goal of equal educational opportunity. Special emphasis in this paper is given to the situation of students enrolled in vocational programs, in community colleges, and in the proprietary sector. These students make up a growing share of post-secondary enrollments and have consumed proportionately greater shares of student assistance funds in the past decade. The conflicting goals and needs of vocational students versus a system of student assistance designed to benefit students pursuing traditional higher education are examined throughout this paper.[1]

I. The Current System of Student Financial Aid

Trends in Aid Availability

Student financial assistance has played an important role in the financing of post-secondary education since the GI Bill was passed following the Second World War. Through the GI Bill, millions of returning veterans from three separate wars have been afforded the opportunity to pay for a college education in return for the service they provided to their country. The National Defense Education Act (NDEA) in 1958 shifted the federal emphasis of "aid for service" to one of providing incentives for students to enroll in certain types of educational programs, particularly in the sciences and engineering.

In the 1960s another shift in the philosophy of providing federal student assistance occurred. The passage of the Higher Education Act in 1965 was motivated by a growing national sentiment to increase opportunities for economically and socially disadvantaged citizens. The federal commitment to equal educational opportunity was established through this legislation, and was strengthened by the 1972 Education Amendments with the creation of Basic Educational Opportunity Grants (since renamed Pell Grants). Pell Grants were designed to serve as a "floor" of support for the neediest students, and are presently part of a package of federal aid programs that includes grants, work-study, and student loans.

Since the early 1970s, federal aid has accounted for approximately three-quarters or more of all financial assistance awarded to students in post-secondary education. State level grant and loan programs presently provide an estimated $2 billion in assistance, or slightly less than 10 percent of aid from all sources. Institutionally awarded aid has been the largest growing component of student aid in the 1980s; in 1988, nearly $5 billion, or about 20 percent of aid from all sources, was provided through the institutions themselves. Other sources, including employer-paid education benefits and private and philanthropic aid, also help to fund some portion of educational expenses.

Chart 1 shows total dollar amounts awarded to post-secondary students since 1970 according to the major sources of support: federal government, state governments, and educational institutions. As the chart indicates, total student aid has grown from around $5 billion in the early 1970s to over $25 billion in 1988. In real terms, aid grew substantially in the early 1970s, levelled off somewhat in the latter part of the decade, and peaked in 1980. (See Table 1.) With the exception of the recent years, total aid in inflation adjusted terms throughout the 1980s has been lower than the 1980 peak.[2] Most of the real decline in aid during the 1980s has been the result of federal actions, while state and institutional aid has increased consistently, helping to temper decreases in federal support.[3]

Changes over time in categories of student aid are helpful in describing general trends in post-secondary financing since 1970.[4] As

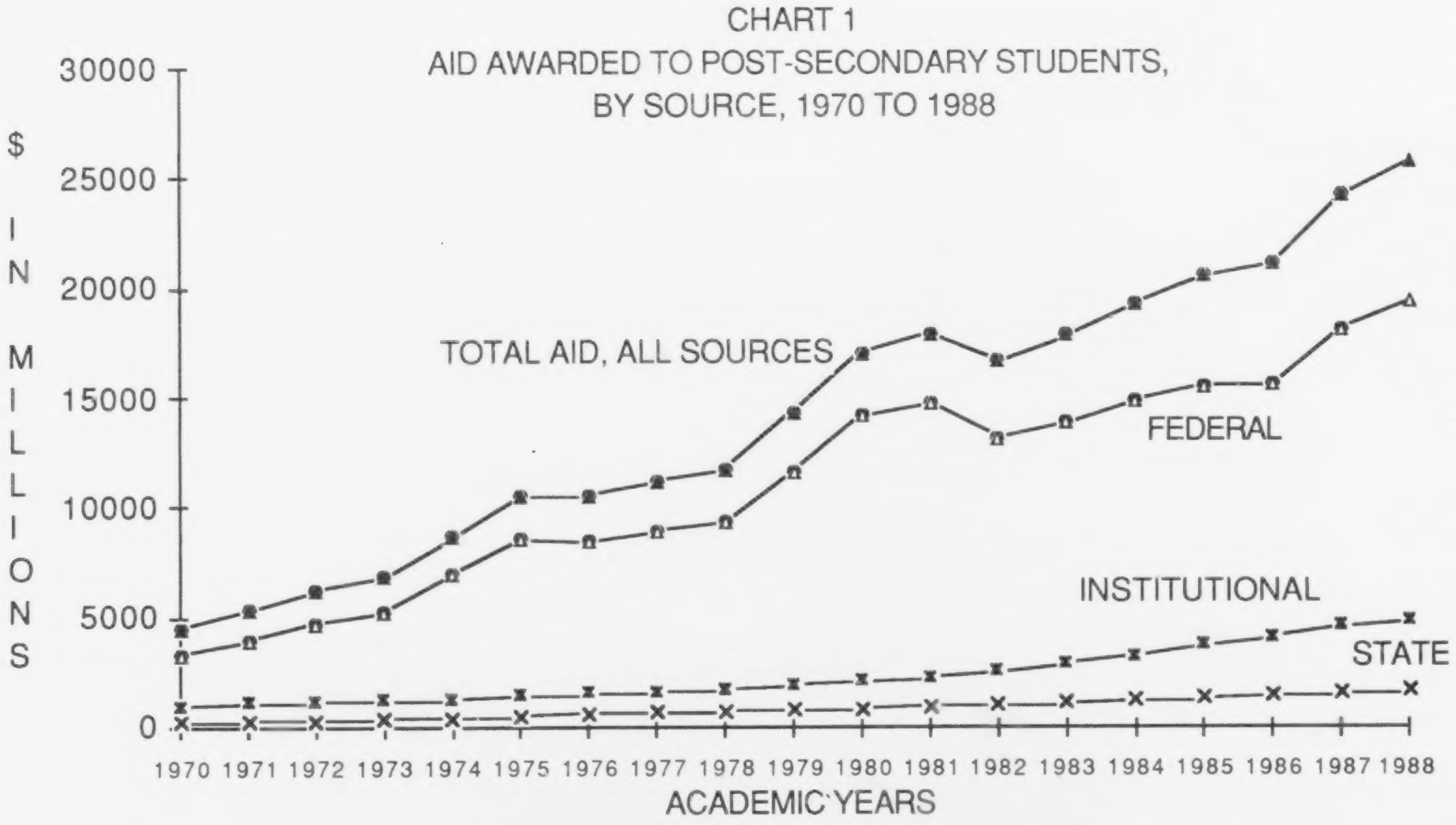


CHART 1
AID AWARDED TO POST-SECONDARY STUDENTS, BY SOURCE, 1970 TO 1988

Table 1
AID AWARDED TO POST-SECONDARY STUDENTS, BY CATEGORY OF AID AND MAJOR AID PROGRAMS, 1970 TO 1988

	Current Dollars, in Millions					Percent Change
	1970	1975	1980	1985	1988*	1970-88
Grants and Fellowships	1351	3146	5814	9106	11383	743%
Pell Grants	0	937	2387	3567	4404	na
State Grants	236	490	801	1311	1642	596%
Institutional Aid	965	1435	2060	3674	4793	397%
Service-Related Aid	1847	5607	4460	1851	1791	-3%
Social Security	499	1093	1883	0	0	-100%
Veterans Benefits	1121	4180	1714	849	740	-34%
College Work Study	227	295	660	656	692	205%
Student Loans	1298	1772	6959	9914	12986	900%
Stafford	1015	1267	6203	8839	11812	1064%
Perkins	241	460	694	703	874	263%
TOTAL AID, ALL SOURCES	4496	10525	17233	20871	26160	482%
	Constant 1988 Dollars, in Millions					
Grants and Fellowships	4117	6917	8349	10016	11383	176%
Pell Grants	0	2060	3428	3923	4404	na
State Grants	719	1077	1150	1442	1642	128%
Institutional Aid	2941	3155	2958	4041	4793	63%
Service-Related Aid	5628	12327	6404	2036	1791	-68%
Social Security	1521	2403	2704	0	0	-100%
Veterans Benefits	3416	9190	2461	934	740	-78%
College Work Study	692	649	948	722	692	0%
Student Loans	3955	3896	9993	10905	12986	228%
Stafford	3093	2786	8907	9722	11812	282%
Perkins	734	1011	997	773	874	19%
TOTAL AID, ALL SOURCES	13701	23139	24746	22957	26160	91%

* estimated

SOURCE: Lewis, 1988.

Table 1 shows grants and fellowships doubled in the 1970s in real terms and increased more than one-third in the 1980s. This growth was due largely to the establishment of the Pell Grants program, which now awards over $4 billion annually. State grant programs and institutional scholarships have also registered healthy increases in this time period, even when inflation has been taken into account.

Service-related aid, which accounted for more than one third of all aid awarded in 1970, has been reduced sharply in the past decade. Social Security education benefits, which totalled five to ten percent of all aid awarded throughout the 1970s, have now been completely phased out. At the same time, Veterans education benefits declined by three quarters, in real terms, since their use peaked in the mid-1970s. This has led to an overall reduction in service-related aid of two thirds in real dollars since 1970.

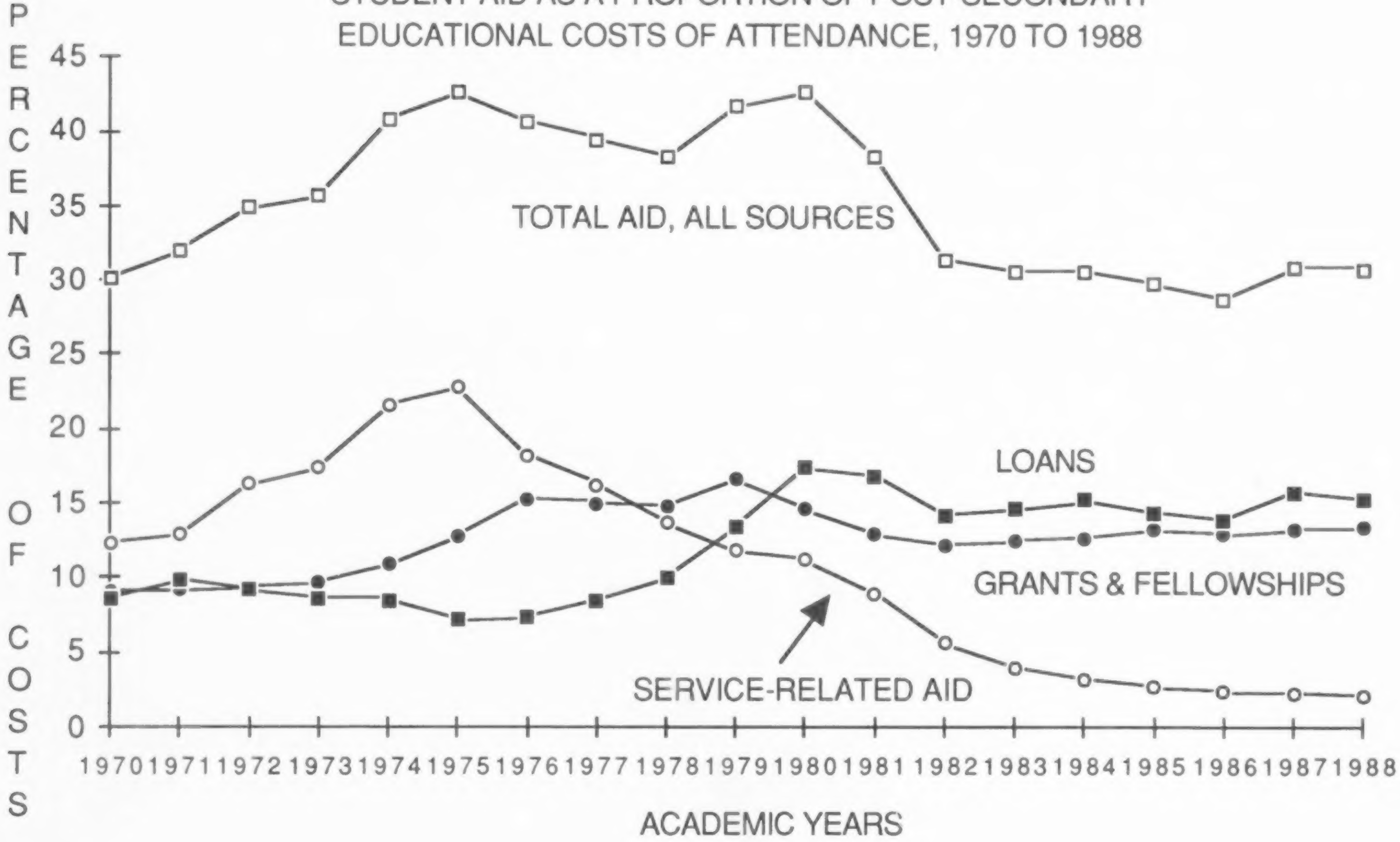
Student loans have registered large increases since the late 1970s, when eligibility for the Guaranteed Student Loan (GSL) (now Stafford) program was expanded. While loans accounted for approximately 10 percent of total aid provided in the early and mid-1970s, they now make up more than 50 percent of this total. The Stafford program alone grew nearly threefold in real dollars between 1970 and 1988. Student loans have clearly become a crucial element in the post-secondary education financing equation.

Chart 2 illustrates this point by showing the percentage of college costs of attendance that are met by the three categories of student aid. As the chart indicates, student aid as a proportion of costs grew substantially in the early 1970s, aided largely by increases in aid awarded through the service-related programs and, to a lesser extent, through the growth in grants and fellowships. Since 1975, however, two very different trends have shaped the capacity of student aid to meet college costs. One is the dramatic decline in service-related aid, which met more than 20 percent of cost of attendance in 1975 but now covers barely two percent of total costs of attendance. The other is the steady increase in the reliance on loans as a means of paying for college; the proportion of costs met through loans in 1988 was nearly twice what it was in the mid-1970s.

Overall, student aid in 1988 covered roughly the same percentage of costs of attendance as it did in 1970. Total aid accounted for approximately 30 percent of college costs in 1970, rose to more than 40 percent in 1975 and, after a slight decline in the late 1970s, returned to this plus-40 percent level in 1980. Between 1980 and 1982, student aid fell from 43 percent of costs to 32 percent as a result of the initial round of Reagan administration budget cuts. Since then, student aid has hovered around 30 percent of attendance costs.

Trends in student aid availability thus have changed in several important ways since 1970. First, the sources and types of aid available have shifted significantly. While Veterans Education and Social Security benefits were an important source of aid through much of the 1970s, their relative impact on education financing has diminished to negligible levels in the late 1980s. Aid in return for service has been replaced by need-based grants and loans as the most important source of student assistance nationally. Second, loans have grown tremendously, especially since the late 1970s, and now form an integral

CHART 2
STUDENT AID AS A PROPORTION OF POST-SECONDARY EDUCATIONAL COSTS OF ATTENDANCE, 1970 TO 1988



part of the financing equation. With loans now making up one half of total aid, they appear to have supplanted grants as the basic form of support for students who can demonstrate need. Finally, while the mix of aid has changed since 1970, it presently does no more overall to help pay for college than it did in 1970.

Who Receives Student Aid?

The distribution of student aid tells a great deal about how post-secondary education and training is being financed in the United States, and whether the aid is reaching its intended beneficiaries. Two types of distribution are discussed here: first, how aid is apportioned to students by the sector of institution attended and, second, what are the characteristics of students who receive aid.

Regrettably, data on student aid recipients has neither been consistently nor completely collected over time. While time series data for some programs are adequate, in many cases the quality of the information is poor or nonexistent. For the purposes of this paper we focus on general demographic data for specific programs and then attempt to generalize about broader trends from this information. Data from a 1986 comprehensive study of post-secondary educational financing, the National Postsecondary Student Aid Study (NPSAS), is also included in order to give some sense of overall financing as it exists today.

Aid By Type of Institution

Table 2 shows the distribution of aid by sector for several federal aid programs. The table indicates trends since 1973 -- the first year of operation for the Pell Grants program -- for both Pell and the so called campus-based programs of Perkins Loans, College Work Study, and Supplemental Educational Opportunity Grants.[5] As indicated, the share of Pell dollars going to students in public two year institutions steadily declined through the middle and late 1970s; from a peak of 27 percent in 1974, the proportion has levelled off at just under 19 percent throughout the 1980s. At the same time the proportion of aid awarded to students in public four year schools, as well as private institutions, has also declined, particularly since 1980.

The decline in the share of Pell Grant dollars going to students in the collegiate sector has occurred because of the rapid growth in the amount of Pell aid that goes to proprietary school students. The share of Pell Grant dollars going to proprietary school students has grown from a low of 7 percent in the initial year of 1973 to the point where students in this sector now receive one quarter of all Pell monies awarded annually. Indeed, by 1985 proprietary students actually received more Pell assistance than students in all private, non-profit institutions of higher education.

Similar trends have taken place with the campus-based programs, though on a lesser scale. Students in community colleges received slightly less of all campus-based funding in 1987 (10 percent) than they did in 1973 (12 percent). The proportion of total campus-based funding going to public four year students dropped from 49 percent to approximately 42 percent in the mid-1980s. By contrast, campus-based aid going to students in private institutions increased from 36 to 38 percent in the middle 1970s to about 42 or 43 percent in the middle

Table 2
PERCENTAGE DISTRIBUTION OF AID, BY INSTITUTIONAL TYPE, FOR THE PELL AND CAMPUS-BASED PROGRAMS, 1973 TO 1987

Pell Grants Program

	Public 2-Yr	Public 4-Yr	Private	Proprietary	Total
1973	24.9%	41.2%	26.3%	7.6%	100.0%
1974	26.7%	40.1%	24.4%	8.8%	100.0%
1975	26.1%	39.0%	24.8%	10.1%	100.0%
1976	23.4%	42.8%	24.6%	9.2%	100.0%
1977	24.3%	42.8%	23.3%	9.7%	100.0%
1978	23.2%	39.4%	26.8%	10.6%	100.0%
1979	21.8%	39.6%	28.1%	10.5%	100.0%
1980	18.6%	41.1%	28.8%	11.5%	100.0%
1981	18.7%	40.7%	27.1%	13.5%	100.0%
1982	18.2%	38.7%	26.6%	16.6%	100.0%
1983	18.5%	38.0%	24.6%	18.8%	100.0%
1984	18.4%	37.7%	23.0%	20.8%	100.0%
1985	18.8%	37.0%	21.9%	22.1%	100.0%
1986	18.7%	35.7%	20.8%	24.8%	100.0%
1987*	18.7%	35.5%	20.1%	25.7%	100.0%

Campus-Based Programs

	Public 2-Yr	Public 4-Yr	Private	Proprietary	Total
1973	11.9%	49.0%	38.1%	1.1%	100.0%
1974	12.7%	47.6%	36.8%	2.9%	100.0%
1975	11.8%	46.9%	37.2%	4.1%	100.0%
1976	11.8%	47.2%	36.0%	4.9%	100.0%
1977	11.5%	47.0%	35.8%	5.7%	100.0%
1978	11.0%	44.8%	37.4%	6.9%	100.0%
1979	10.4%	43.4%	40.9%	5.3%	100.0%
1980	10.1%	43.0%	41.8%	5.2%	100.0%
1981	10.3%	42.5%	42.0%	5.1%	100.0%
1982	9.8%	43.3%	42.0%	4.9%	100.0%
1983	9.7%	42.8%	42.5%	5.1%	100.0%
1984	9.6%	42.7%	42.7%	4.9%	100.0%
1985	9.8%	41.6%	43.3%	5.3%	100.0%
1986	9.7%	41.8%	42.9%	5.6%	100.0%
1987*	9.6%	42.1%	43.0%	5.3%	100.0%

* Estimates, U.S. Department of Education

SOURCE: U.S. Department of Education, 1987; Lewis, 1988.

1980s. Proprietary school students, while continuing to receive the smallest share of campus-based aid of any sector, did have the largest relative increase, from 1 percent in 1973 to slightly more than 5 percent in the mid-1980s.

Comparable data on the distribution of aid over time for other programs, by sector, is inadequate or unavailable. However, the evidence available would suggest that the proportion of aid going to proprietary school students is increasing in many other programs as well. For example, unofficial estimates of the percentage of Stafford loan dollars going to students in proprietary schools show an increase from approximately 15 percent of all loans in 1979 to nearly 35 percent in 1987.[6]

When the aid received by community college students enrolled in vocational programs is combined with the aid received by proprietary school students, we estimate that the percentage of all aid currently awarded to vocational students is approximately 30 percent.[7] This percentage varies by program, however, and has changed measurably in the past decade. For example, the percentage of Pell Grant dollars awarded to vocational students rose from approximately 15 percent in the mid 1970s to nearly 35 percent in the mid-1980s. While no time series data on the distribution of loans are available, information from selected state agencies indicates that the proportion of loans borrowed by proprietary school students has substantially increased. Thus unofficial estimates indicate that approximately 40 percent of Stafford loans and more than 60 percent of Supplemental Loans for Students loans currently are provided to vocational students. For the federal campus-based programs, a slight decline in aid awarded to community college students roughly offsets gains for the proprietary sector, resulting in a stable 10 percent share for vocational students over the past decade. For other programs, the proportion of aid received by vocational students is 10 percent or less, with the exception of the GI Bill where we estimate that 20 percent of aid goes to students in vocational programs.

The 1986 NPSAS survey provides information on the proportion of students who receive federal aid. According to the survey, of all undergraduates enrolled in post-secondary education programs in the fall of that year, slightly over one third -- 35 percent -- received some form of federal student aid. By sector, 29 percent of all students in public institutions received federal aid, compared to 48 percent of students in private colleges, and an astounding 81 percent of students in proprietary institutions (Center for Education Statistics, 1988). This data suggests that students in vocational programs are much more likely to receive federal aid than are students in academic programs.

The Characteristics of Student Aid Recipients

Information on the individual characteristics of recipients is also useful for describing how student aid is distributed. Data from the 1986 NPSAS survey shows the percentage of all undergraduate students who received some form of federal aid by selected student characteristics. Overall, 35 percent of all undergraduates received aid. By race, 32 percent of white students, 33 percent of Asians, 41 percent of Hispanics, and 56 percent of Black students received some form of federal assistance. Females were slightly more likely to receive aid than males; 36 percent of females received aid compared to 34 percent of males. Full time students were approximately three times more likely to receive federal assistance than part time students, according to the survey.

Nearly equal percentages of financially dependent versus independent students, 34 percent and 37 percent, respectively, were awarded federal aid in that year. However, this distribution varied by program. For example, while 18 percent of all students received a Pell Grant, only 14 percent of dependent undergraduates but more than 23 percent of financially independent students were Pell recipients. Conversely, while 20.5 percent of all undergraduates received a Stafford Student Loan, the dependent/independent split was a more uniform 21.1 versus 19.7 percent.

The increasing age of recipients is another indicator of the changing distribution of student aid. For instance, the percentage of Pell Grant recipients 22 years of age or younger has declined in the last decade, from 68 percent in 1978, to 64 percent in 1983, to 51 percent in 1986 (U.S. Department of Education, 1987). This mirrors general trends in higher education enrollments, where the percentage of students under the age of 25 has declined from 72 percent in 1970 to 62 percent in 1980 to 58 percent in 1985 (U.S. Department of Education, 1988).

The characteristics of vocational student recipients appear to be largely the same regardless of whether they are enrolled in proprietary or community college programs. For example, vocational students tend to be from families with lower incomes than other post-secondary students, according to the 1986 NPSAS survey. Vocational students are also more inclined to be financially independent than other students -- roughly 53 percent of vocational students are independent, compared to 38 percent of all students. Evidence from other studies suggests that vocational students are more likely to be Black, female, and older than students in academic programs (Lee, 1987, and Wilms, Moore, and Bolus, 1987).

II. Ways to Improve the Effectiveness of Student Aid

How have student aid programs performed relative to their central mission of supporting equality of educational opportunity? Much of the debate in this area has focused on both the capacity of the current student aid programs to fulfill this mission and their efficiency as vehicles for furthering the national goal of equal opportunity.

Despite the large infusion of funds into student assistance programs over the past several decades, participation rates in post-secondary education have not increased appreciably. Data from the Current Population Surveys (CPS) for 1970 to 1985, by family income group, show that participation rates for dependent students between the ages of 18 and 24 fell for all income groups in the first half of the 1970s, principally because of the end of the Vietnam War and the reduced pressure on males to enroll in college to avoid the draft. From the mid-1970s through 1980, participation continued to decrease for all but the very lowest income group. In the 1980s, however, the opposite trend has taken place: participation rates for the highest income groups have increased moderately, while rates for the two lower income groups have remained constant or declined slightly (Hauptman and McLaughlin, 1988).

Concerns about participation are particularly acute for students from ethnic or racial minority groups. The percentage of black high school graduates aged 18 to 24 who completed at least one year of post-secondary education grew substantially between the early 1960s and 1975. Since 1975, however, participation rates have remained relatively steady for black students, reflecting a slight increase in participation for black females and a decrease in participation for black males. Participation rates for Hispanic students have also remained relatively constant, or modestly declined, during this period. Conversely, white student participation rates in college have edged upward slightly during the past decade.

These CPS data, however, only consider higher education enrollments, excluding most students in post-secondary vocational programs. To the extent that vocational programs enroll higher proportions of minority and disadvantaged youth, the trends in participation rates represent more of a transfer among post-secondary sectors than a loss in the overall number of minority students. Still, the apparent lack of progress in improving rates of participation for economically disadvantaged students, especially given the substantial amount of funds expended for student assistance annually, is troubling.

This section identifies ways in which the student aid system may have contributed to the lack of progress in improving the participation of low income and minority students in post-secondary education. These include the growing use of loans rather than grants as a primary means for financial aid; the rapid increase in student loan default costs; the complexity in the delivery of student assistance; the inability to meet the needs of the rising number of older, nontraditional students; the extent to which the system no longer is targeted on those lower income college students for which it was primarily intended; and the marked decline over time in service-related benefits. Options suggesting ways in which these shortcomings might best be addressed are also included in this section.

Redressing the Imbalance Between Grants and Loans

In the 1980s loans have become the primary form of student financial assistance. They now account for more than half of all student aid, a significant change from the beginning of the decade when they equaled 40 percent of all aid provided. It is even further from the mid-1970s, when loans represented less than 20 percent of the total aid provided and various types of grants represented close to 80 percent.

The shift from grants to loans can be attributed more to the growth of loans than to dramatic decreases in grant assistance. In real terms, loan volume has tripled from the early 1970s to the late 1980s. Grants did not increase as fast, particularly in the 1980s. With the rapidly rising cost of post-secondary education that has taken place since 1980, loans have filled the void and assumed a more prominent role in financing.

Eased eligibility requirements for the Stafford program in the late 1970s as a result of the Middle Income Student Assistance Act, and more favorable terms for lenders, spurred the increased reliance on loans. The program grew from less than $2 billion in annual loan volume in 1977, to more than $6 billion in 1980, to nearly $12 billion in 1988, even though more restrictive borrowing requirements have been instituted in recent years. The entitlement nature of the program, and its off-budget financing that hides the "true" budgetary costs for many years after the loan is made, also helped to stimulate the growing emphasis placed on loans.

In a related way, the increasingly subsidized nature of the Stafford program over its two decade existence may also be a contributing factor. When it was created in the mid-1960s, the program was intended to provide essentially market-based loans of convenience to middle income students. Over time, however, the federal government has encouraged greater participation in the Stafford program by offering incentives to its various participants. Students benefit from below market interest rates and by having no repayment obligations until after graduation. Banks receive special allowance payments from the federal government that assure market rates of return -- regardless of the interest charged to borrowers -- plus a full federal guarantee in the event of default. State level guarantee agencies receive administrative cost allowances and federal reinsurance of all defaulted loans submitted for claims by banks, as well as collecting fees from borrowers.[8] The result is a program with attractive incentives for students to borrow and a powerful financial network with a considerable stake in encouraging students to borrow.

Options for Redressing the Growing Grant/Loan Imbalance

One way of addressing the imbalance between grants and loans would be to strip away many of the subsidies that make the loans so attractive. This has already been done on a smaller scale in a subsidiary part of the Stafford program, the Supplemental Loans for Students (SLS) program. SLS relies on a variable interest rate, similar to market-based rates, and removes the costly in-school interest subsidies of regular Stafford loans; repayment begins 60 days after loan origination. Unfortunately, the existence of the more subsidized Stafford loans, combined with the fact that financially dependent students are not eligible to borrow in SLS, limits its potential impact. A reformed system in which less subsidized loans constituted a larger percentage of all loans might help to correct the grant/loan imbalance by making subsidized loans available only to those who truly need them.

To redress the imbalance between grants and loans, however, it is also important to increase funding for grants. The savings that could be achieved by restricting the availability of loan subsidies could be applied to higher funding levels for grant programs. Beyond this, greater resources for grants would help to stop the erosion in gains achieved by economically disadvantaged students in the early and middle 1970s.

Reducing Student Loan Default Costs

One obvious and troubling consequence of the increased reliance on loans over the past decade is the growing cost of student loan defaults in the Stafford program. In fiscal 1987, federal default costs in the

Stafford program were $1.4 billion, representing more than 40 percent of total federal expenditures for the entire program. This is dramatically different from a decade ago, when federal default costs were just over $200 million and constituted less than 25 percent of program costs. The recent dramatic growth in borrowing under the SLS program -- where the majority of borrowers are from proprietary schools -- combined with projected increases in regular Stafford loan borrowing will likely push annual federal default costs over $2 billion in the next few years.

Most of the increase in default costs is a function of the larger number and amount of loans being made, rather than a marked change in the rate of default. For instance, loans in repayment have grown from $3.2 billion in 1979 to $23.6 billion in 1987, while the rate of default has not changed very much. U.S. Department of Education figures indicate that the default rate in 1980 was 12.5 percent, and in 1986 was 12.6 percent. However, the Department measures defaults on a cumulative basis. A better measure of changes in default activity would be an annual rate of default, a ratio of dollars defaulted in a given year to total dollars in repayment in that year. The annual default rate has hovered between 4 to 7 percent in the 1980s, measuring about 6 percent in 1987.

Vocational students have received a large amount of the attention in recent years because of their apparently higher incidence of default. Studies conducted in several states, including California, New Jersey, and Pennsylvania, show that community college students default more than twice as frequently as four year college students. Proprietary students default at an even higher rate, with annual default rates of 20 percent or more in most cases. This has become an important issue for many schools because of recent Department of Education proposals to limit the participation in federal aid programs of institutions with high default rates.

Since the Carter administration, when student loan defaults were first raised as a serious public policy issue, periodic default reduction efforts have been made. These have included greater use of government and private collection agents and federal income tax refund offsets for student loan defaulters. While some gains have been made through these enhanced collection efforts, the best method for reducing defaults would be to prevent them before they occur. Prevention should, therefore, be a central part of any future plans for lowering default costs.

Options for Reducing Default Costs

One way of reducing default costs would be to require more risk sharing amongst the major Stafford program participants. Currently lenders, guarantee agencies, and educational institutions assume little or no financial risk because of the 100 percent federal guarantee. As a result, few incentives exist to encourage program participants to keep defaults low. One means for sharing risks would be to require those lenders, guarantee agencies, and educational institutions with high rates of default to pay money into a loan insurance fund, which could then be used to offset the direct federal costs of default. It would also be helpful if the fees that borrowers currently pay were used to offset the federal costs of defaults.

Another avenue toward default reduction would be to provide "low income insurance" for those borrowers who have debt service obligations that exceed their ability to repay on a student loan. Many defaulters appear to be individuals who simply do not have enough income to meet their repayment obligations, and therefore default on the loan for lack of resources. Instead of being branded as "deadbeats," these borrowers should be able to appeal for help in meeting their obligations. Extended repayment terms, graduated payment schedules tied to income, and other alternatives could be devised to prevent these students from defaulting without increasing federal interest payments or other costs.

Simplifying the Student Aid Delivery System

Another reason for the relative lack of effectiveness of student aid programs is how the aid is delivered to students. One of the most pressing problems of the current delivery system is its complexity, both for students and those who administer the program.

Students and their families are subject to a great many complexities in the student aid delivery system that may serve as a deterrent to their participation in higher education, especially among lower income students who may be intimidated by the process. Lengthy general application forms, such as the College Scholarship Service's Financial Aid Form, are much more complicated than the trimmed down 1040 tax forms that most lower and middle income families use. Other information, such as federal tax forms or supplemental application forms from institutions, is also frequently required for receipt of aid.

Further complications may arise when the aid is actually awarded to students, especially with student loans.

Many students also face an obstacle in the form of a general lack of information about the types and amounts of aid available, and incomplete information on the aid that has actually been awarded. Students and their families often fail to consider student assistance until well into the high school years, when poor family financial planning and the pressing problems of applications and other concerns may inhibit or discourage participation in post-secondary education. These factors may especially work against minority and low income students, who are often first generation college students and who would especially benefit from better and more complete early knowledge of student aid programs.

Institutional financial aid administrators have also seen exponential growth over the past two decades in the intricacy of student aid programs. In addition to the many institution-based and state aid programs, aid administrators have been hampered by complicated, time consuming, and often confusing rules about the administration of federal aid programs. Recent changes to program administration, including a federally mandated system of need analysis (formerly guided by an industry established standard known as the Uniform Methodology) and strict verification of student aid application data, have compounded the level of complexity.

Options for Improving the Delivery of Student Aid

The delivery system for student aid could be improved by simplifying the process of application, especially for the neediest students. Students with family incomes below the poverty level or some other minimum standard should be allowed to fill out a short, easy to comprehend form. This would ease application worries for those students who clearly should be receiving the most assistance, and may also help to reduce workloads for financial aid professionals. Simplification has been urged in many quarters for a number of years, but has consistently run into opposition from those who feel that the system should be designed to respond to small gradations in a family's economic circumstances. This simplicity/equity tradeoff is similar to that in the tax system, where arguments against simplifying the tax system have been fueled by fears that vertical and horizontal inequities would result.

More emphasis should also be placed on early awareness or early intervention programs. Programs that instill an understanding of the benefits of post-secondary training, as well as the availability of financial assistance, have multiplied in recent years. Eugene Lang's "I Have a Dream" Foundation, which guarantees access to higher education for "adopted" classes of inner city seventh grade students through financial assistance and counseling services, is considered the forerunner of many of these programs. This kind of assured access intervention appears to hold much promise based on the fact that virtually all of Lang's initial class of 60 students completed high school and over half have attended college. But it is too early to evaluate most of the other "adopted" classes, and a "class-by-class" approach is too random to constitute a successful long-term public policy.

Efforts to institutionalize the Lang concept, such as New York State's recently adopted Liberty Scholarship and Partnership programs, also should be explored. The federal government could do its part in this area in one of several ways. It could provide more funds for the existing TRIO support services programs through which students receive tutorial, counseling, and other support through programs such as Upward Bound. It could also change the process for determining aid eligibility, moving up the time frame for analyzing need. For example, students in the seventh or ninth grade could be declared eligible for federal student aid on the basis of their family incomes at that time. This would ease concerns about being able to afford post-secondary education and might provide a greater incentive for academic achievement at any earlier age.

Meeting the Financing Needs of Older, Nontraditional Students

Perhaps the greatest strain being placed on the student aid system at the present time is the growing number of older, nontraditional students. Most student aid programs have been designed to offer educational opportunities to young, full time students who are dependent on their parents for financial support. However, increasing numbers of older, often part time students are now enrolled in post-secondary education. Yet the student aid system's ability to meet the financial needs of these students has been marginal.

The trend toward older students has largely been fueled by demographic factors. The traditional college age cohort peaked in the early 1980s at approximately 30 million. Since then this age group has declined by nearly 15 percent, with expected declines through the mid-1990s of another 10 percent. While total higher education enrollments have remained steady in recent years, despite predictions to the contrary, the number of traditional college age students has declined. Current enrollment figures therefore reflect an increase in older students; more than 40 percent of all college students were age 25 and over in 1987, compared to just over 35 percent in 1980 and less than 30 percent in 1970.

The changing profile of students in recent years has also seen a shift toward more part time enrollments, which grew by nearly 90 percent between 1970 and 1985, while the number of full timers increased by only about 20 percent. Much of this increase in part time enrollments can be attributed to the growth in older students entering or returning to the world of post-secondary education.

The problems that these students present for the student aid system are many. Though the need-based financial aid system has tried to take the circumstances of nontraditional students into account -- by creating special rules for married students, those with dependents, and those who work fulltime and attend classes -- many needs remain unmet. Financial need, defined as the difference between student expenses and student resources, has become increasingly difficult to quantify rationally and equitably, particularly for the nontraditional student.

The central problem lies in the way student aid need analysis operates. Because student resources are largely a function of income in the year preceding the year of attendance, many older students, with higher incomes than recent high school graduates, do not qualify for assistance. But the higher cost of living expenses for older students, combined with support for dependents and other costs, are not fully taken into account, revealing a bias toward younger students that may discourage the participation of older individuals.

Options for Meeting Nontraditional Student Needs

One way to improve the financing picture for nontraditional students would be to encourage the greater use of employer-paid education benefits. Unlike the traditional college age student, a principal form of assistance for older students is the tuition payments made on their behalf by employers. The benefits that employers and society in general receive from retrained and further educated employees are well documented. A sensible tax policy for employer-paid education benefits would serve to encourage the greater participation of members of the labor force in post-secondary education. Current law allows employers to deduct these expenditures as business expenses, while employees are not required to declare this assistance as taxable income. However, recent changes in the law have restricted this tax break to undergraduate expenses, a change which will limit the career enhancement potential of employer financed benefits. It has also renewed pessimism about the long-term viability of this tax benefit. A sound policy might be to restore fully the tax exemption for all employer-paid post-secondary expenses and to make it a permanent section of the tax code.

Another important avenue for enhancing the educational opportunities of the workforce involves the retraining of unemployed and dislocated workers. Very little student financial aid is currently provided to individuals who are unemployed, particularly those who are seriously dislocated through plant closings or other local economic downturns. What little is provided is not available in a systematic way that allows displaced workers to make the transition between jobs and careers. The Department of Education student aid programs, as has already been mentioned, are not constructed with the older students in mind. A handful of colleges and universities provide reduced or zero tuitions for dislocated workers and farmers, but this hardly represents a concerted effort. Department of Labor programs through the Job Training Partnership Act do provide stipends for unemployed and dislocated workers. But these DOL provisions are generally underfunded relative to need, cannot be used for tuition expenses, and they are largely limited to vocational programs.

What is needed is a partnership of the federal and state governments, colleges and universities, trade schools, and the private sector that would provide adequate financial aid to dislocated workers to help meet their education and retraining needs in a broad range of areas. The federal government and the states should be willing to make stipend payments that help cover the living costs of the workers and their families while they are undergoing retraining. Colleges and universities, as their contribution to the partnership, should be prepared to reduce substantially or totally waive their tuitions for these students. If the partnership is to succeed, companies and unions must also participate by contributing funds for these purposes.

Targeting Student Aid on Intended Beneficiaries

As the federal approach to student aid was being developed in the late 1950s, one of the central goals was to encourage more participation in higher education programs in the sciences, engineering, and other areas of national interest. The concept of equal educational opportunity introduced in the 1960s broadened this strategy to include opening opportunities for students from lower socioeconomic backgrounds to pursue a post-secondary education. The result was a significant increase in the number of students participating, especially through the mid-1970s.

Over time, however, the focus of the student aid programs on increasing the college participation of economically disadvantaged students has been diluted in two principal ways. One change began in the early 1970s with the inclusion of proprietary school students in the definition of eligible student aid recipients. Because of this change, the term "post-secondary education" was introduced to make note of this broader eligibility. A consequence of this changed definition of who should receive federal student aid dollars is that students pursuing distinctly different forms of education now compete for the same dollars. The higher proportion of low income students who attend proprietary school programs has led to increased student aid funds going to students in this sector. Given the constraints on federal funds, the diversion of federal dollars to proprietary school students has led to a serious erosion in the amount of aid being delivered to students in traditional higher education programs.

In the past decade, the number of collegiate students who receive federal aid has declined substantially. For example, Pell Grant recipients in proprietary schools grew from 286 thousand in 1980 to 633 thousand in 1986, an increase of 120 percent, while the number of collegiate Pell recipients declined, from 2.42 million in 1980 to 2.03 million in 1986, a decrease of over 15 percent (U.S. Department of Education, 1987).

The other change in student aid eligibility that may have contributed to decreasing program effectiveness is the growth in the number of middle income students who receive aid. Federal student aid's ability to serve adequately the needs of disadvantaged students has been hampered in recent years by legislative changes that would extend aid to higher income students. Because of limited program funding, these changes have resulted in enhanced eligibility for higher income students at the expense of lower income students for whom most aid programs have been designed.

One example of these changes is in the Pell Grants program, where the eligibility formula has changed significantly since the program was established in 1973, resulting in increasing numbers of awards to students who initially would have been ineligible. Examples of more favorable treatment for middle income students include more lenient rules for families with more than one child in college at the same time, and an allowance for state and local taxes. The proportion of Pell aid going to middle income students, as a result, has increased somewhat over time. It would have increased even more except that limits in the overall funding for Pell Grants act as a constraint on the growth in income eligibility for the program (Mortenson, 1988).

It also appears that "middle class creep" has occurred in the way that institutions provide aid from their own resources. As the number of traditional college age students has declined, many institutions have competed for this declining pool of students has been to provide more aid on the basis of merit or simply to give more aid to middle income students as a way of encouraging them to attend a particular institution. This competition for students through aid represents a serious erosion in the need-based student aid system as it has operated over the past 35 years.

Options for Targeting Aid on Intended Beneficiaries

In a world of unlimited resources, extending student aid to students in proprietary schools and those from middle income families would be a good policy to follow. But in the real world of limited resources for student aid, expanding aid to some groups of students serves to limit severely the impact of student aid dollars on their primary beneficiaries. To improve the effectiveness of student aid programs in helping economically disadvantaged students go to college, therefore, it may be necessary to target the resources more than is currently the case.

One way to target funds would be to place some restrictions on the amount of aid provided to proprietary school students for student aid.

This might be done, for example, by setting out different award and loan schedules for students in collegiate and vocational programs. While this could be interpreted as discrimination, there is considerable precedent in the student aid programs, particularly loans, where the amount of aid provided varies with the level of education. In the current Stafford loan program, first and second year students can borrow a maximum of $2,625, while third and fourth year students can borrow up to $5,000, and graduate and professional school students can borrow up to $7,500 annually.

Another avenue to pursue is to limit the eligibility of students who do not have a high school degree or equivalent but nonetheless qualify for aid under the "ability to benefit" provisions in the legislation. If an institution determines that a student without a high school degree could benefit from post-secondary training, then the student is deemed eligible for aid. This provision, which essentially only applies to students in vocational programs in proprietary schools or community colleges, is one of the greatest abuses of the current system because institutions do not take sufficient care in determining which students indeed have the ability to benefit. At a minimum, it would seem appropriate to end the eligibility of these students to borrow. Under the current arrangement, students without a high school degree are allowed to borrow fairly large sums of money for a very unpredictable benefit.

A further step in this direction would be to remove students without a high school degree from the post-secondary student aid programs and place them instead in the vocational training programs of the Department of Education and the Department of Labor. Another possibility would be to shift the eligibility of all post-secondary vocational students into other programs, either into existing Department of Education and Labor programs or into a new, separate program of post-secondary vocational aid. Such a change would certainly represent a shift from the federal policy established in 1972 with regard to vocational programs, and many would oppose it for this reason. But no one at that time imagined the large shift in the distribution of resources that would occur, or the degree to which such a shift might limit the aid provided to disadvantaged students who want to go to college, which was the initial focus of the legislation.

With regards to the shift in student aid funds toward middle income students, the obvious way to target funds is to change program formulae to restrict the eligibility of these students for aid. For example, it may no longer make sense simply to divide a family's contribution by the number of children in college -- this is the provision that now allows students from families with incomes in excess of $100,000 to receive subsidized loans. It might be more appropriate to return to the initial formulation in the Pell Grant program and the need analysis systems where families with two children in college were expected to contribute more than a family with one child in college, but not twice as much. Other changes that have been enacted, such as making allowances for state and local taxes in calculating family contributions, should also be reviewed on equity grounds.

Linking Student Aid with the Performance of Service

Providing aid in return for service represents one of the oldest forms of government student assistance. In the 1930s, the federal government provided small matching grants that encouraged states to establish work-study programs for Depression-era students. The GI Bill, the largest of the student aid programs, was clearly service-related. The College Work Study program, established in 1965, provides an opportunity for college students to work while in school as a means of paying a portion of their costs of attendance. Another form of service-related aid was also enacted in 1965 when the Social Security program was expanded to provide benefits for the post-secondary educational costs of the 18 to 22 year old children of program beneficiaries.

In the three decades following the Second World, service-related aid grew to be the largest form of student aid; in 1975, it accounted for over half of all student aid provided. Since the mid-1970s, however, service-related aid has dramatically decreased as a proportion of all student aid provided. Veterans educational benefits have declined and Social Security educational benefits have been phased out entirely. Funding for College Work Study program has been relatively level since 1980, meaning that the real value of such assistance has dropped by about a third in the 1980s. For all three service-related programs combined, funding has dropped by 85 percent in real terms since the mid 1970s, and it now accounts for less than 10 percent of all aid provided.

In recent years, a growing number of proposals have been made to renew the linkage between the performance of service and the receipt of student aid. The motivations for these proposals vary widely. Some aim to rekindle a sense of voluntary spirit among American youth. Others are designed to provide an alternative to the military draft. Still others seek to develop a greater commitment to service over a lifetime. The variety of national service programs that have been proposed in recent years reflect this diversity of objectives.

At least one of the national service proposals also emanates from a sense that the current student aid programs are not working as well as they should and that having students perform service in return for aid would improve the effectiveness of -- and the political support for -- the concept of student aid. This formulation of national service was first proposed by the Democratic Leadership Council and is embodied in legislation introduced by Senator Sam Nunn and Rep. Dave McCurdy. Under the proposal, high school graduates could serve for one or two years in a Citizens Corps in tasks such as assisting in hospitals, serving as tutors in schools, or helping in environmental projects. In return for this service, members of the Corps would receive a modest stipend and the payment of a benefit that could be used either to help defray their post-secondary educational costs or as a downpayment for a home. It is fair to say that this proposal has moved the idea of national service to the forefront of national issues.

The most controversial aspect of the Citizens Corps concept is the proposed requirement that most students would have to perform service in order to be eligible for federal student aid. Critics point out that this service requirement would create a two-tiered system in which students from middle and upper income families would be able to attend based on their parents' financial resources, but those from economically disadvantaged circumstances would be forced to serve in order to go to college. The Citizens Corps approach could be very expensive in that it would provide benefits that are at least several times larger than what students currently receive in the student aid programs. If the same number of students were to receive aid under the Citizens Corps approach as now receive student aid, the program would cost tens of billions of dollars.

Options for Encouraging Service Through Student Aid

One option for encouraging service is to adopt the Citizens Corps approach as proposed. But the controversy surrounding its service requirement represents a substantial obstacle to its legislative adoption. In addition, the Citizens Corps would only be for recent high school graduates. This restriction means that individuals without high school degrees or their equivalent, the "forgotten half" of Americans who do not go on to college, would be ineligible for either educational or housing benefits under the current proposal. As a result of this restriction, students in vocational programs would not be able to participate fully.

One modification to the Citizens Corps concept that would greatly enhance its political viability and its fairness would be to drop the service requirement. Under such a situation, students who performed service would receive larger benefits than what non-servers receive through the existing set of student aid programs. This arrangement would be analogous to what happened with the GI Bill in the late 1960s, 1970s, and 1980s when it has coexisted with the student aid programs. Another possible modification to the Citizens Corps proposal is to maintain the current availability of grant assistance for lower income students, but to allow students from all income levels to choose between service and loans. That is, a student could borrow to pay for the costs not met through family resources and grant assistance, or could opt for service to make up the difference between costs and family/grant assistance. The Citizens Corps would also be fairer if non-high school graduates were eligible for educational and housing benefits.

Another approach is to set up a system in which benefits are provided for service that is performed at different times of the lifecycle. For example, a modified Citizens Corps for recent high school graduates as described above might reasonably be combined with enhanced work-study benefits for community service performed by college students and with loan forgiveness for college graduates who choose to enter designated public service professions such as teaching or nursing. Service over a lifetime might also be encouraged through an arrangement similar to the National Guard in which individuals who served in their communities on weekends in return would receive educational or housing benefits, such as has been proposed by Senator Barbara Mikulski. Stipends or benefits might also be provided to retired individuals who participated, a provision which is included in the Citizens Corps proposal.

Given the uncertainties surrounding the national service concept at this time, however, it does not make sense to implement a full scale program. Instead, whatever program is enacted should be initially conducted through demonstration projects as a way of testing the various avenues for expanding national and community service opportunities.

NOTES

[1] The terms "higher education" and "collegiate education" encompass students in four and two year public and private institutions, including community college vocational students, but exclude all students in proprietary institutions. "Post-secondary education" refers to all forms of education and training beyond the high school level.

[2] Data for student aid are sometimes adjusted significantly over the course of several years. As a result, considerable faith should not be placed in data suggesting a sharp increase in aid in 1987 until more accurate and complete information is available.

[3] Other sources of student assistance also exist, though reliable data overtime are not available for all such sources. Estimates of two of the most important sources, employer-paid assistance and state-level loan programs, suggest that, combined, approximately $2 billion annually is provided to students pursuing post-secondary educations (Hauptman, 1989, and Merisotis, 1988). Therefore, a reasonable approximation of total student aid in recent years would be in the $25 to $27 billion range. Excluded from this total would be any aid provided from other private or philanthropic sources, for which no reliable estimates exist.

[4] In this paper, student assistance programs are divided into three broad categories. Grants and Fellowships includes all grant assistance that is awarded based on need. This includes three federal programs,

Pell Grants, Supplemental Educational Opportunity Grants (SEOG), State Student Incentive Grants (SSIG), as well as state grant programs and institutionally awarded grants. Service-Related Aid is grant and work assistance that is targeted to specific beneficiaries in return for some type of service. This includes Social Security benefits, Veterans Education benefits, military benefits, the federal College Work Study (CWS) program, and other, comparatively small federal grant programs for students in health professional, legal, and other fields of study. Student Loans comprise the Stafford Student Loan (formerly Guaranteed Student Loan) program, the Perkins Loan (formerly National Direct Student Loan) program, and other, small federal loan programs for students in various health-oriented fields of study.

[5] The campus-based programs are administered directly by financial aid administrators at participating schools. The application for, and awarding of, aid through these programs is determined by the institutions in accordance with federal guidelines.

[6] More complete data on the extent of borrowing in the Stafford program, by sector, may be available in late 1989 because of new federal data reporting requirements.

[7] It has been estimated that roughly half of all community college students, on a full time equivalent basis, are entered in terminal vocational programs (Lee, 1987). Since the receipt of need-based aid is not conditioned on the type of program or field of study, it is

therefore reasonable to assume that roughly half of all student aid awarded to community college enrollees is received by students in vocational programs.

[8] A guarantee agency will receive less than 100 percent reinsurance if its annual default rate (defined slightly differently than prescribed here) falls below certain levels.

REFERENCES

Hauptman, Arthur M. "Financing Higher Education Over a Lifetime." Paper prepared for The Gerontological Society, Washington, DC, January 1989.

Hauptman, Arthur and McLaughlin, Maureen. "Is the Goal of Access to Postsecondary Education Being Met?" Paper prepared for the Education Policy Seminar, Aspen Institute, August 1988.

Lee, John B. "Postsecondary Vocational Training: How Effective Is It?" Career Training Journal 4(May 1987), 32-36.

Lewis, Gwendolyn L. Trends in Student Aid: 1980 to 1988. New York: The College Board, September 1988.

Merisotis, Jamie P. "An Inventory of Innovative Financing Plans to Help Pay for Higher Education." Paper prepared for Conference on Changing Roles and Responsibilities in Financing Higher Education, Brookings Institution, December 1988.

Mortenson, Thomas G. Pell Grant Program Changes and Their Effects on Applicant Eligibility, 1973-74 to 1988-89. Iowa City: American College Testing Program, May 1988.

U.S. Department of Education, Office of Student Financial Assistance. Pell Grant Program End of Year Report, 1987.

U.S. Department of Education, Center for Education Statistics. Undergraduate Financing of Postsecondary Education: A Report of the 1987 National Postsecondary Student Aid Study, May 1988.

U.S. Department of Education, National Center for Education Statistics. Digest of Education Statistics, 1988.

Wilms, Wellford W., Moore, Richard W. and Bolus, Roger E. "Whose Fault Is Default?" Educational Evaluation and Policy Analysis 9(Spring 1987), 41-54.

14. THE TAX TREATMENT OF TRAINING AND EDUCATIONAL EXPENSES

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14. THE TAX TREATMENT OF TRAINING AND EDUCATIONAL EXPENSES

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I. Introduction.

This paper evaluates the tax treatment of investments in the most important components of human capital, the education and training of workers, under both the personal and corporate tax codes. It focusses on the ways in which the current tax laws affect the relative attractiveness of investments in human capital compared to other investments. First, the provisions of the personal tax code are analyzed to determine which types of education and training are favored or discouraged by current law. Second, this paper examines the effects of tax law on investment in human and physical capital, on the one hand, and investment in research and development, on the other hand. This latter analysis is based upon the corporate tax code.

Outline of the Paper. Section II describes the criteria we employ and summarizes the existing research on the effects of taxation on human capital versus physical capital investment. The current treatment of education and training costs under the personal income tax is outlined in section III below. The Tax Reform Act of 1986 and subsequent legislation changed several provisions of the personal income tax law with respect to education costs. Possible distortions created by that tax treatment are examined subsequently. Two effects of personal income taxation are of particular concern. The first is the choice between investment in human and in physical capital. The second concerns the choice between different categories of education and training investment. The current personal tax law distinguishes between educational investments related to a taxpayer's current occupation and those investments that qualify the taxpayer for an alternative occupation. The distinction in tax treatment discourages training which would facilitate an economically efficient change of occupation.

Section IV describes the current treatment of worker education and training expenditures under the corporate tax laws. It compares the tax treatment of human capital, physical capital, and research and development spending. (It also considers the extent of favorable treatment granted by the corporate tax code.) Section V outlines proposals to improve the allocation of resources through changes in the personal and corporate tax codes. Shortcomings and merits of alternative proposals are also discussed. The conclusions appear in section VI.

II. Tax Objectives: Criteria and Literature Review.

Criteria. Traditionally, tax laws are evaluated according to two classes of criteria: equity and efficiency. Equity is often judged by how well the tax base conforms to the concept of Haig-Simons income. In this view, taxes should be levied on net changes during a year in total economic well-being. The net change in total well-being is given by changes in net worth and in leisure time. Previously taxed wealth holdings are excluded from this income measure, as are the economic costs incurred during the current period to generate income (Simons, 1938). The efficiency objective of taxation is met when revenues are generated without distorting the choices that would have been made in the absence of taxation -- i.e., by tax "neutrality."[1] If the tax system tends to alter decisions that change will be referred to as a "distortion." If not, we will say the system is "neutral." This paper describes how choices about education and training are affected by the tax system.

While equity and efficiency are reasonable goals, implementing them consistently in the tax code is difficult for many reasons, including ambiguities in the definition of taxable income. This crucial issue bears on our subsequent discussion of the costs incurred for investment in education and training. The problem is this: The Haig-Simons concept of net income attempts to measure net well-being. Whereas income needs to be measured in tangible monetary quantities if it is to be equitably taxed, well-being often includes aspects which are not explicitly priced in the market. Examples include the value of leisure time, time used in productive non-market activities and the value of good health. We shall refer, for convenience only, to all non-market uses of time as "leisure."

Because the value of leisure is not assessed as income, two people who choose different consumption or production mixes yielding equivalent levels of personal satisfaction can pay different amounts of federal income tax. If one citizen chooses to consume relatively more leisure and the other chooses to consume relatively more goods purchased with higher money income, the consumer of more leisure has sacrificed paid employment in favor of this consumption choice, yet the income equivalent of this leisure is not taxed. If the goal is to minimize the distortion of individual choices, the tax base should include items like the monetary value of leisure. However, inclusion of these income components may contradict conventional views of fairness (Warren, 1980; Stephan, 1984).

By the same Haig-Simons tax objective argument, intangible costs undertaken in order to create income should be as deductible from taxable income as are money costs. Within the context of education and training, the time that is invested in education and training is as much a cost as the training materials purchased (i.e., books, tuition). In this respect, both types of costs should be set against the additional well-being resulting from the pursuit of education or training.

The full cost of acquiring education or training can include both direct outlays and foregone opportunities. For most students beyond the high school level, at least some portion of expenses for tuition, books, and other related educational purchases or fees are incurred directly to undertake higher education. Occupational training can involve direct spending by the trainee, for example, through formal training schools, or by the firm, for example, through on-the-job training given by senior employees. When employers pay wages to trainers and trainees for time devoted to training rather than production, they are incurring direct costs for workforce training. Employers also incur direct costs in purchasing and developing training materials.

Students also forego currently attainable earnings to invest in themselves. An individual who could be working but is attending a formal technical training program is clearly sacrificing earnings. Less obviously, but no less true, workers receiving on-the-job training in generally productive activities forego the higher wages they could have obtained by choosing jobs without any training component. Current production sacrificed by firms in favor of training in firm-specific skills is also costly. Together, foregone personal earnings (or foregone leisure) and foregone production, together with direct expenses for education and training, comprise the full investment cost of education or training.

Haig-Simons income, neutrality, foregone earnings, and leisure are concepts which play important roles in the theoretical literature evaluating tax systems. These concepts can be incorporated into the tax system only imperfectly. Nevertheless, paying due attention to them has consequences of great practical importance for the appropriate tax treatment of education and training expenditures, as we shall now see.

Literature Review. Many theoretical models have been developed indicating how tax incentives affect the choice between investment in physical and human capital (Boskin, 1975; Stephan, 1975; Heckman, 1976; Eaton and Rosen, 1980; Sgontz, 1982).[2] Typically these models incorporate only selected features of corporate or personal taxation. For example, Boskin described a model using foregone earnings as the only cost expended to invest in education. When tax rates are proportional, the tax does not distort pre-tax choices to investment in human capital (see Boskin, 1975). This result applies more generally to those circumstances in which the full cost of education or training is immediately deductible and in which taxes are imposed on earned income only (see Eaton and Rosen, 1980). Intuitively, this result can be explained this way. Suppose that no tax is paid in the initial period because the student sacrifices earning any income in order to invest in education, but the resulting income is fully taxed. Usually, capital acquisition costs are not initially tax deductible, but they are fully amortized later and deducted. Since taxes are proportional and only on earned income, the tax payer is indifferent between the equivalent of immediately expensing capital acquisition costs but paying a tax on all income in the future, versus paying tax on earned income less a proportionate share of capital acquisition costs in the future.

A more complicated model, introduced by Heckman (1976), analyzes a tax on both earned and nonearned income (wages and interest), but retains the assumption of a proportional tax rate. Taxation now favors investment in human capital since the costs of education are immediately and fully deductible. By taxing interest earnings, the after-tax interest rate is lowered relative to the return on human capital. While the value of the amount invested or saved is taxed as soon as it is first obtained, the tax on human capital is applied on future earnings. Because future taxes are valued less than the same tax payment currently, the taxpayer prefers to invest in human capital.[3] This model more closely resembles the current corporate tax treatment of human capital and physical capital investment where most training costs are immediately deductible but where physical investment costs must be amortized over time.

Eaton and Rosen (1980) specified a general model, used it to illustrate the basic Boskin and Heckman results, and then added uncertainty to the analysis of investment in human capital relative to physical capital. Under these circumstances, taxation of earnings buffers expected wage gains and losses, but also reduces expected income. These two aspects of taxation have opposing effects on investment in human capital. The first reduces risk and thus encourages more human capital investment. The second effect curtails investment in human capital as long as risky investing is less desirable at lower income levels. Since these two effects act in opposite directions, the net effect of taxation on human capital investment is "ambiguous" -- even under a proportional earnings tax and even when foregone earnings are the only cost of human capital investment.

Sgontz (1982) also analyzed a fairly general set of circumstances in which the tax base includes both wages and interest earnings and in which educational costs include both foregone earnings and direct expenditures. In this analysis, only foregone earnings are excluded from taxable income; the model thus resembles the current personal income tax treatment of investments when educational fringe benefits and direct costs of educational investment are not excludable from income. Under these circumstances, with proportional taxation, the effect of taxation on human capital investment varies with the ratio of direct educational costs to foregone earnings. The proportional tax rate and the rate of return on physical capital investment determine a critical ratio between direct educational costs and foregone earnings. If the critical ratio is exceeded (direct costs are larger relative to foregone earnings), increases in tax rates reduce investment in human capital. As long as actual direct expenditures for education or training are less than the critical ratio, increasing taxes favors investment in human capital. Since different students face different direct cost shares, they may react differently to increases in tax rates. As noted below, the variations in the incentive structure in this model may correspond to real world differences in educational investment according to whether or not it is job-related.

With progressive taxation, the models summarized above are greatly complicated (see Sgontz, 1982). With reduced tax progressivity under the Tax Reform Act of 1986, however, the less complicated results arising from models with proportional tax rates are not unreasonable. The results based on foregone earnings alone are also reasonable if foregone earnings dominate total education costs or if all educational costs are immediately deductible from earnings for tax purposes. The Sgontz model illustrates the extent of dominance required when direct costs are not fully deductible. Based on simple calculations from this model and reasonable assumptions about tax and interest rates, even a small ratio of direct education and training costs to foregone earnings is sufficient to make human capital investment less attractive at higher tax rates.

In summary, when a proportional tax is levied on earned income and interest income and when foregone earnings are the only cost of investment in human capital, then human capital investment is favored relative to physical capital investment (Heckman, 1976; Eaton and Rosen, 1980; Sgontz, 1982). These assumptions are not precisely met in practice and empirical research to test the effective rate of return on human versus non-human capital may be appropriate. For those students incurring direct educational expenditures which are high enough, the current income tax will discourage investment in human capital (assuming tax rates are essentially proportional over the relevant range). In all probability however, any distortion between investment in human and physical capital is quantitatively small. This suggests that distortions among different types of education and training under the personal tax code are more important. For that reason, we concentrate on this distortion in section III. Under the corporate tax code, human capital and research and development might be favored over investment in physical capital within the firm. However, because firms have little incentive to train their workers for new jobs outside of the firm, the current job versus non-current job distinction is also relevant in the corporate tax analysis.[4]

III. Education and Training under the Personal Income Tax.

A. Current Tax Treatment of Education and Training Expenditures.

This section describes the current tax code and the resulting incentives in detail, making use of the concepts developed in the preceding section.

1. Foregone earnings. Earnings foregone in order to undertake investments in education or training are fully excluded from taxable income. No one suggests they be treated otherwise, but the consequences are significant. For those foregoing regular earnings for formal education, these foregone earnings typically comprise a large share of total educational costs. For those participating in employee training programs provided by the firm, foregone earnings might well comprise all of the individual's cost of training. For individuals, this exclusion is tantamount to the expensing for tax purposes of the major cost of acquiring human capital. Neutrality between current training investments and physical investments requires that both costs be treated comparably with other investments. Since immediate expensing of most long lived physical capital is not permitted, human capital investment is favored by immediate exclusion of foregone earnings. This advantage is inherent in tax systems, and any suggestions for policy change must begin from the advantaged position it confers on education and training.

2. Out-of-pocket costs. Direct expenses on education and training are treated differently under the personal tax code, depending on the nature or objective of the education undertaken and the method of financing utilized. Only those personal expenditures directly related to an employee's current occupation reduce taxable personal income. In this regard, from the Haig-Simon viewpoint, extension education is treated as a cost of earning current income. Two constraints limit deductibility. First, the courses cannot be educational prerequisites for the employee's current occupation. Second, the job-related courses

cannot enable the worker to choose a new occupation upon their completion (Bernstein, 1988; Internal Revenue Service, 1988a, 1988b, and 1988d).

Employee financed training. Current, job-related, employee out-of-pocket expenditures on education must be reported as itemized deductions from personal income (Federal Income Tax Schedule A). For taxpayers whose deductions exceed the standard deduction, unreimbursed educational expenses related to the employee's current occupation are deductible but are subject to a floor. The tax code treats educational expenses related to employment as a component of "job expenses and most other miscellaneous deductions;" only the excess over two percent of adjusted gross income qualifies as an itemized deduction on Federal Income Tax Schedule A (Internal Revenue Service, 1988a).

The floor and the standard deduction cloud the impact of tax deductibility on the decision to undertake education. For these to affect incentives, the taxpayer must first have enough deductions to itemize. Second, the taxpayer must have current job-related expenses equalling at least two percent of adjusted gross income for the full impact of the tax deductibility of current job-related education spending to take effect. If these two conditions are met, then personal education expenditures related to the employee's current job are immediately and fully deductible from income even though the returns from the investment in education are likely to be earned over several tax years.

For those able to take advantage of this deduction, both direct costs and foregone earnings associated with current job-related investment in education and training reduce taxable income immediately by the full cost of the investment. An equal amount invested in physical capital would be amortized over time, the present value of which is less than an immediate deduction. Those unable to take full advantage of this deduction do not face the same clear incentive. For them, one component of education cost is fully excludable (foregone earnings) but the other does not reduce taxable income (education expenditures). Depending on the relative shares of these non-taxable and taxable cost components, the educational investment may or may not be favored by the tax code according to the model specified by Sgontz (1982). If lower income taxpayers are less likely to have the adequate supplemental deductions, they are also less likely to benefit from the deductibility advantage of job-related out-of-pocket human capital investment. Sgontz's article suggests that nondeductibility of large enough direct education costs more than eliminates the inherent advantage conferred on human capital investments by the exclusion of foregone income from taxable income.

Employer financed training. Tuition financed by employers was treated differently from those educational expenses fully paid by an employee until quite recently. Until December 1988, educational costs paid by an employer were subject to a maximum tax free annual income exclusion of $5,250, with some restrictions, if distributed through an employer's "educational assistance program" (Internal Revenue Code, Section 127, Internal Revenue Service, 1988a. For 1988, the law restricted this exclusion to undergraduate level education.) Employer payment for educational expenditures beyond the tax free limit was reportable as taxable income by the employee.[5] Unless Congress revives this provision, this treatment will change beginning with tax year 1989.[6]

Under section 127 of the law which recently expired, education was treated as a fringe benefit. Exclusion for education in this guise removes the current job versus non-current job distinction as long as the firm is willing to finance both types of education. Exclusion is analogous to full and immediate deduction of the direct education costs from total compensation. Under these programs, human capital investment is tax-favored once again, since physical investment costs would need to be amortized. The tax incentive to an employee is at the employer's discretion. If a firm chooses to offer full educational assistance under section 127, its employees gain the tax advantage. A firm may choose, however, to provide educational assistance only for current job-related courses. In that event, current job-related training is favored relative to individual physical capital investment, but non-current job-related expenditures by the employee would be non-deductible and hence disadvantaged. For those working in firms not offering any assistance at all, the tax incentive is once again dependent upon the ratio of direct costs to foregone earnings since only job-related training costs are deductible from income when paid directly by the employee.

Without a legislative extension of recent practice, if an employer provides full financing for educational expenses which would be deductible if the employee financed the expenses alone, these amounts need not be included in taxable income at all. If employers finance broader training expenditures, the total education benefit could be considered to be taxable income. The employee, however, could deduct any eligible job-related proportion from taxable income (Ernst & Whinney, 1988; Internal Revenue Service, 1988a and 1988d; White, 1989).

Special circumstances. In addition to these general personal tax treatments of direct educational outlays, several features of the tax code address specific types of educational costs. Scholarships and fellowships receive preferential treatment under the tax code. Some universities grant tuition waivers to employees and their dependents. This, too, is treated preferentially by the tax code. Finally, interest payments paid on educational debt are also costs of education. Like many other self-financed costs of non-current job-related education, these interest costs are not deductible from current or subsequent income.

The Tax Reform Act of 1986 taxes some previously tax-free components of scholarship and fellowship income. Amounts covering tuition and other direct costs of education are still excludable from taxable income. Under the current law, scholarship and fellowship amounts exceeding these direct costs of education are taxable, as are all scholarship and fellowship amounts requiring the recipient to work. For example, compensation paid to research or teaching assistants is taxable under current law (Internal Revenue Service, 1988d; Madoff, 1987).

Allowable scholarship and fellowship income is immediately and fully excluded from taxable income. For students receiving it, the tax treatment is certainly not neutral. For students without scholarships and fellowships, the tax incentive is again uncertain. The nondeductibility of out-of-pocket costs reduces the bias in favor of human capital investment.

Another method of financing educational expenditures also escapes taxation under the personal income tax. Some universities offer their employees tuition waivers or reductions for courses taken by their employees or their employees' dependents. As long as this benefit is available to a broadly defined group of employees rather than a relatively exclusive group (tenured faculty, for example), this tuition waiver or reduction, when used for undergraduate courses, escapes federal income taxation (Bernstein, 1988; Internal Revenue Service, 1988d; Madoff, 1987).

Prior to the Tax Reform Act of 1986, interest payments on borrowing for all educational purposes were treated identically to interest payments paid on consumer debt. Both were fully deductible against adjusted gross income by itemizers. The Tax Reform Act reduced the incentive to finance personal consumption through debt finance by ending all consumer interest deductions except for those associated with mortgage finance. The pre-existing deduction for consumer interest payments is to be phased out over three years; thus, the deduction for payments to finance education interest is being phased out as well. However, when educational spending is financed by home equity, the interest payments can be included as an itemized deduction. Gross

(1988) has written at length on the deductibility of interest payments for educational investment since the Tax Reform Act of 1986. He argues that this new nondeductibility law favors homeowners unjustly.

There may be two justifications for making interest payments for training deductible. First, if education spending is more of an investment than is the purchase of consumer durables, then treating educational interest payments differently from consumer debt is appropriate. Second, since the corporate tax code allows interest payments associated with physical capital investment to be deducted from corporate income, the same treatment should be given to interest payments associated with human capital interest. If not, interest payments on human capital are a nondeductible cost of earning income adding to other nondeductible costs, thereby reducing the advantage of human relative to physical investments.

3. Union wage concessions. When unions negotiate wage concessions in return for retraining benefits, the tax treatment of those benefits is unclear. In the absence of explicit new legislation, most such retraining arrangements would be treated as compensation to the employee.[7] However, if the external retraining benefits could have been packaged so as to fall within a qualified "educational assistance program" as defined by section 127 of the tax code and if the retraining benefits cost less than $5,250 per employee per year, the benefit might have been excluded from employee income just like any other employer-financed educational fringe benefit.[8] Under section 127, the fringe benefit must be broadly available to many employees with a wide range of

earnings levels or the benefit is not favored by income excludability. With the expiration of section 127 of the tax code, all retraining benefits paid to finance training outside of the firm are taxable income to the recipient. Retraining expenditures are taxable to the employee since the spending is intended to qualify the employee for a new occupation.

The tax incentive analysis is unchanged. If retraining benefits are exempted from taxable income, all costs of human capital investment to the retrainee would be excludable from income whereas comparable physical capital investment costs are amortized. Under such an arrangement, human capital investment by the individual would be favored over physical capital investment by the tax code. Retraining benefits are not exempt however. This large taxable benefit, when combined with small foregone earnings costs, may actually discourage retraining by the individual. From the firm side, as we shall describe in more detail in section IV, the full deductibility of employee compensation favors retraining over physical capital investment as long as the retrained workers remain with the firm. (Or, to put it another way, full deductibility of employee training offsets, at least to some degree, the chance that a trained worker may leave the firm which paid for the training.)

B. Tax Incentives.

Based on this discussion of personal tax code provisions, some general conclusions can be drawn with respect to the tax advantages and disadvantages of human capital investment.

1. Education and training vs. physical capital. Currently the advantages of human capital investment relative to physical capital investment differ for an individual by type of education or training undertaken. If the section 127 education benefit is extended, the relative advantages would also depend on who finances the education or training -- the taxpayer or the employer.

When the full costs of acquiring training are excluded or deducted from income (section 127-type education benefits, current job-related education for some taxpayers, scholarships, fellowships, and tuition waivers), human capital investment is favored. When education or training costs are non-excludable or non-deductible (non-current job-related education financed by work-study, savings, research assistantships, teaching assistantships, and all other arrangements where the student works to pay his or her way through school), the tax incentive is less clear-cut. If the non-deductible cost portion is large enough, and it is likely to be large enough, amortization may favor physical capital investment (or savings) over human capital investment.

2. Current job vs. another job. There is a clear cut and intentional advantage conferred in the current personal income tax on investments intended to produce a higher future stream of income in an employee's current occupation. As a general rule, only those expenses related to skills or learning used in a taxpayer's current occupation are allowed as deductions from income by the earner. An incentive is given to further current skills, but retraining or education which might lead to an occupational change is discouraged. This tax treatment is inconsistent with a human capital representation of educational expenses. If education is viewed as human capital investment, it is a cost of earning that augmented income, and should be so treated by the tax code. That education expenses are incurred initially but earnings are realized in the future, however, requires that education expenses be treated more like a physical capital investment than an immediate expense.

The bias in the personal income tax code against interoccupational mobility will be inefficient if it leads to underinvestment in training for changed occupations. Underinvestment can arise from differences in employee and employer knowledge about the value of general training as opposed to "firm specific" training.

Job training may be so specific that it is of value only to the firm providing it ("specific training"). Such training will not be undertaken voluntarily and financed by workers since the benefits are not portable. This specific training will be paid for by the firm, however, and the optimal amount will be provided. (This is because the firm can equate, at the margin, the benefits arising from training with the cost to the firm.)

Alternatively, job training may be useful in other firms or industries ("general training"). Such training may be undertaken voluntarily and paid for by employees, since a worker could always change firms to reap the returns from investment in such training. If workers can fund the expense, the training will be tax deductible as noted above, as long as workers remain in the same occupation. The firm may also be willing to pay the training costs directly, provided they can recoup such costs by paying lower wages to the trainee. (For example, educational courses leading to college degrees, "general training," are often financed by employers as long as the trainee agrees to remain in the firm for a specific period after the completion of training.)

In a perfectly functioning market, the optimal amount of general and specific training will arise regardless of the portability of such training.

There are several problems, however, which could give rise to inefficient training investments when the investment is portable. First, for general training workers may be capital constrained. The firm could serve as a funding source, as noted above, but this requires agreement on the quid pro quo. Agreement also requires clarification of the corporate tax rules governing deductibility of general training expenditures, as discussed below.

Second, and perhaps more importantly, the firm may be better able to evaluate the market value of general training than are individual workers. Such an asymmetry of information would imply either high transactions costs in financing general training or underinvestment. The high transactions costs would arise as employers simultaneously tried to inform their workers of the general training and to arrange for a suitable quid pro quo for dispensing the information. These high transactions costs would, in turn, lead to less investment than is socially efficient. If firms did not find it in their interest to dispense the information, then there would be underinvestment in portable training.

In the absence of portability, this inefficiency would not arise. Tax deductibility of the investment costs would therefore, move the level of investment closer to the optimum.

That the tax code biases human capital investments against inter-occupational mobility is infrequently criticized or defended. Inferentially, the literature suggests three reasons for tolerating this bias. First, it is difficult to distinguish learning not required for a current job from consumption. Second, the rationale for the exclusion would have to differ from that of an expense necessary for acquiring contemporaneous income -- the current basis for the deduction. Third, treating human capital symmetrically with physical capital raises conceptual and administrative difficulties (see McNulty, 1973; Stephan, 1984; Gross, 1988).

3. Education and training vs. research and development. Like physical capital and human capital investment, investment in research and development is undertaken to achieve higher future earnings.

Research and development seems more relevant to the corporate tax code since few self-employed individuals are likely to incur substantial research and development costs. Consequently, the issue is afforded a more detailed treatment in the corporate income tax section of this paper. Nevertheless, for consistency, the personal choice between human capital investment and investment in research and development through self-employment is noted here briefly.

The federal tax code allows some research and development costs to be expensed immediately. The investors reserve the option of immediate deduction or amortization over time (Internal Revenue Service, 1988c). While the foregone earnings component of human capital investment is excluded from taxable income and, therefore, treated like immediately expensed research and development, direct spending on education and training is not always deductible from personal taxable income. As is the case with physical capital, amortized treatment of research and development costs may or may not favor investment in human capital depending on the ratio of nondeductible to deductible or excludable costs. Immediately deductible research and development is favored relative to investment in human capital since direct outlays paid by a taxpayer on education facilitating retraining or contributing to new career potential are not deductible. These incentives are further complicated by a federal research and development tax credit. These complications are discussed with respect to corporate taxation; analogous arguments apply here.

The current versus non-current job bias carries over into this analysis as well. Unless an employer is specifically allowed to finance employee education subject to Internal Revenue Code specifications and limitations, most initial training and retraining expenditures are not deductible from personal taxable income. If an individual wants to self-invest in education to generate a higher stream of future income, tuition and other out-of-pocket costs are not deductible as costs of generating income unless clearly linked to the taxpayer's current occupation. Research and development which allows a self-employed individual to develop a brand new product is as deductible as research improving current lines of business. The research and development treatment suggests that out-of-pocket expenditures for education and retraining be deducted from gross income by the taxpayer investing in education regardless of whether the training allows the taxpayer to enter a new occupation upon completion of the training.

IV. Education and Training under the Corporate Income Tax.

A. Current Tax Treatment of Education and Training Expenditures.

1. Foregone production. When firms invest in capital equipment, there need be no sacrifice in current production. Prior capital remains in place, the workforce operates on the existing capital as usual. Investment in new capital can be financed through debt or retained earnings. A firm choosing to retrain its workforce might use periods of slack production to do so and would not sacrifice production for training. However, a firm choosing to retrain its workforce might sacrifice current production by devoting current labor resources to

training rather than production. Like, the foregone earnings of the student or trainee, these indirect firm costs of education and training are fully excludable from taxable income for the firm. In this respect, it is as if these indirect costs of investment in human capital are deductible from taxable corporate income.

2. Direct training costs. Training expenditures made by firms are generally tax deductible.[9] Deductible training costs generally fall into one of two expenditure categories for corporations -- compensation or direct business expenses. Firms make direct expenditures for training in a variety of ways. On the one hand, firms may purchase training materials and develop in-house training programs. Expenses for short-lived training materials are deducted from firm revenues as business operating expenses. For some types of in-house training, the firm may hire a professional trainer or other experienced personnel to conduct explicit training activities. Most commonly, other more experienced workers simply train less experienced workers through on-the-job example. Compensation paid to any of these training personnel is immediately deductible from firm revenues as is any other reasonable employee compensation.[10] In other cases, trainees may participate in some of the training provided directly by the company on uncompensated time. For example, new restaurant personnel may be asked to memorize company policy and the restaurant's menu on their own personal time. In such a case, costs incurred by the firms to develop the policy manual or menu is expensed by the firm. Generally, for most in-house training,

much of the direct cost of human capital investment is currently deductible by the firm.[11]

Another way to finance employee training is through tuition or training program reimbursement (for example, previous section 127 education plans). Firms often pay for employee participation in educational programs offered outside of the firm. In most cases, educational benefit payments and reimbursements are considered to be employee fringe benefits. Fringe benefits are a component of employee compensation and can be deducted from corporate revenue as costs doing business for corporate tax purposes (Internal Revenue Service, 1988c).

B. Tax Incentives under the Corporate Tax Code.

1. Education and training vs. physical capital. The immediate deductibility of most education and training costs biases corporate investment in favor of human capital investment, or at least those investments of special importance to the specific firm relative to other firms. The tax code requires amortization of physical capital investment. By spreading the total cost of physical capital investment over several tax periods, the tax code matches a share of the total cost of physical capital investment against resultant income. In fact, the tax code allows physical capital investment to be expensed in a short period relative to the actual useful life of the machinery. However, most investment expenditures for human capital are immediately expensed rather than amortized.

2. *Education and training vs. research and development*. Like investment in tangible physical capital, successful investment in research and development, education, and training leads to higher future earnings for the firm. In this respect, expenditures for research and development, training and education are analogous to spending for durable production machinery. Non-distortionary treatments of research and development, education, and training expenditures would follow the physical capital treatment of investment costs. Neither research and development, education, nor on-going training is treated in quite the same way as physical capital investment.

Like physical capital costs, research and development costs should be allocated across those production periods where resultant income is generated. Instead, Congress has decided to subsidize some research and development expenditures by allowing the spending to be expensed immediately. For certain types of development expenses, the taxpayer can elect to deduct the spending immediately or to amortize (Internal Revenue Service, 1988c). Immediately expensed research and development costs are favored relative to physical and human capital investment amounts which are not immediately and fully deductible. Amortized research and development costs might or might not be favored relative to physical capital investment depending on the relative relationships between income-generating years and amortization years. Except for capital equipment purchased for training purposes and "start up" training, costs of training seem to be immediately deductible under the corporate tax code. These deductible costs are treated much like deductible research and development costs under the corporate tax system.

The tax code also allows a tax credit for increasing research and development expenditures. If more research and development is undertaken in the current tax year relative to an average of previous research and development, one-fifth of the increase can be deducted directly from the taxpayer's tax liability.[12] No such explicit tax credit exists for education or physical capital investment. Implicitly, training may benefit from the Targeted Jobs Tax Credit if eligible workers are hired and trained as a result. The former physical capital investment tax credit has been repealed.

V. Tax Code Changes to Restore Neutrality.

Generally speaking, the tax code should not favor certain types of investment unless a conscious decision is made to subsidize one type of investment relative to another. In order to avoid distortions in investment decisions through differential tax treatment, the tax code should treat different types of investment comparably.

A. Personal Income Tax Code.

A variety of reforms could reduce disparities in the current personal tax treatment of current job and non-current job investment in human capital. Each of three proposals -- extension of the employer fringe benefit exclusion, complete deductibility of all investment costs for education and training, and amortization of educational investment costs -- is outlined and discussed in turn. However, before discussing the proposals, we turn to an important problem in the measurement of investment in education. The problem involves separating education for investment from education for consumption.

In general, educational pursuits include components of both consumption and investment. Courses taken purely for enjoyment but which never generate a stream of taxable income in return should not, in principle, be treated as human capital investment. A pure treatment of investment in human capital would require that investment and consumption components of educational expenditures be distinguished. Drawing such a distinction is administratively difficult.[13] A potential approach is to be found in section 127 of the tax code. Section 127 permitted certain educational expenditures financed by employers and widely available within the firm to be excluded from taxable income. Implicitly, this treatment makes sense if employers are less likely to finance frivolous education or education for consumption purposes than the individuals themselves (Stephan, 1984). As noted below, we propose the expensing or amortizing of educational expenses, in part, because the consumption component is not a great concern. Consumption is favored by the tax code in many other areas. The tax code allows subsidized meals provided by employers to escape taxation. Recreational facilities provided by employers are enjoyed by employees yet the value of this enjoyment is not included in taxable income. If consumption of education is a relatively small percentage of investment in education, then the consumption component is merely treated like existing forms of subsidized consumption.

1. Extending the educational fringe benefit exclusion. Extending the income exclusion for employer-paid education for employees would reduce the disparity in treatment between investment in skills useful in the current job and a non-current job. Current proposals exclude from income all education benefits paid by the employer up to some dollar limit, as long as the benefit program is available rather freely to different income levels of employees. The extension would not distinguish between job-related and non-job-related benefits; if firms permitted non-job-related educational pursuits, so would the tax authorities. Employees working in firms without these plans might be encouraged by the tax code to invest in current job-related education but will be encouraged to a lesser extent or even discouraged from pursuing education leading to occupational change.

2. Deductibility of all education costs. Another possible remedy would be to allow immediate deductibility of all educational investment.[14] This would remove the bias against investment in skills required for new jobs. However, such a change would favor human capital investment over physical capital investment in both personal and corporate taxation. Immediate deductibility of all costs would mean that education for pleasure could be deducted together with education for investment. It also means an immediate tax savings largely for middle and upper income families since these families are more likely to

incur the highest out-of-pocket costs for education. Inequities could be reduced by phasing out the deduction at higher income levels and be limiting the deduction to the earned income of the trainee.[15] Another possibility would be to allow deductions for selected types of education and retraining. For example, education or training undertaken by those served with plant closing notification could be declared tax deductible.

If human capital investment and research and development are to be treated comparably by the tax code, immediate expensing of costs of both types of investment favors these two types of investment over investment in physical capital. If such an outcome is desired, then an option to expense education costs, parallel to the treatment of research and development costs, should be adopted in the personal tax code as well. If the objective of tax policy is to subsidize certain research and development costs relative to other investments even beyond the influence of the research tax credit, then neutrality might be established between human capital and physical capital investment while maintaining the potential research and development tax advantage. This could be accomplished in the personal tax code by allowing out-of-pocket educational expenses to be amortized, like long-lived physical capital investments, on Schedule C. Corporate tax treatment would also require amortization of training costs.

3. Amortization. Amortization would make the treatment of educational capital spending more comparable with that of physical capital. In theory, this would involve taxing (imputed) foregone earnings as income but then amortizing the capital acquired over the

working life of the trainee. From a practical standpoint, foregone earnings would have to be estimated. McNulty (1973) suggested that foregone earnings, based on the earnings of individuals of comparable age and education, could be included in the gross income of the student or trainee. However, this would treat individuals inequitably depending on whether their true foregone earnings fell short of or exceeded the average earnings of their age and educational cohort (McNulty, 1973). It also raises the same issues of personal choice mentioned earlier (Warren, 1980; Stephan, 1984). Comparable treatment of human and physical capital investment are more likely to be equivalent when the tax rates are proportional rather than progressive.

The current system, permitting no deduction, is one extreme position. The other extreme would be to treat all human capital investments the same way, and in the same way as physical capital investments.[16] Since foregone earnings are already excluded, that cost component would not be amortized under this proposal. The amortization period could be determined by the tax authorities according to the same principles which govern amortization of physical capital. Human capital investors who are unable to work for the full length of the amortization period can be allowed to take a large deduction in the final work period (Goode, 1976). This proposal raises problems since temporary absences from the labor force are indistinguishable from permanent withdrawals in some cases.

Taxpayers could report their total income to the Internal Revenue Service on Form 1040 as usual. If the taxpayer had undertaken formal training contributing to the income, these expenses could be amortized according to a schedule to be legislated by Congress. The amortized deduction could be taken on the Schedule A. Revisions to the current tax forms would be minor. An administratively difficult aspect of this proposal is devising a neutral amortization treatment for educational investment. While investment in physical capital involves only direct spending, investment in human capital also includes foregone earnings which are excluded from taxable income. This feature requires that neutrality between investment in physical and human capital would require a more accelerated deduction schedule for the direct costs of physical capital investments than the direct costs of human capital investment. The problem is not insurmountable. However, further careful attention must be given to this issue before this treatment can be fully operational.

The treatment of self-employment income on Schedule C provides a model for a remedy for the distortion between investments in human capital which generate new skills and those which improve current skills. Schedule C allows self-employment gains and losses to be either added to or subtracted from other earned and nonearned income. If the self-employment activity were actively pursued during the current tax year, losses can be used fully to offset other income. If the self-employment does not meet particular participation rules for the tax year, deductions for losses may be limited or disallowed. A similar treatment can be applied to investments in human capital which involve the acquisition of new skills. The deductibility rules might be based on whether the taxpayer earns income which can be linked to earlier investment in human capital. If so, some portion of the human capital direct expenditures may be deducted against the resultant earnings gained during that tax year. The amortization schedules for investments in human capital can be approximated in a manner comparable to the treatment of physical capital attained to generate self-employment income while taking into account the immediate "deductibility" of foregone earnings inherent in the investment in human capital.

The difficulty of this approach involves establishing criteria for deductibility to ensure that human capital investment be amortized but that educational consumption be excluded from the deductible portion of total education expenses. The taxpayer would have to demonstrate that the educational expenses incurred during the past or present can be directly linked to the taxpayer's current earnings stream for deductibility to be allowed. For graduate or professional training, this criterion could be applied in a rather straightforward manner, at least as long as the student pursued a standard course of study. Complications arise in considering broader education costs such as the cost of undergraduate courses unrelated to the student's eventual major or job requirements (McNulty, 1973). Provided that undergraduates take most courses broadly contributing to general human capital, the occasional course taken exclusively for pleasure might not be a cause for concern.[17]

B. Corporate Tax.

The corporate tax code treats costs incurred for investment in human capital differently from those costs incurred for both physical capital investment and research and development. Complete tax neutrality would require that all three be treated in the same manner. According to the Haig-Simons definition, the costs of all three investments would be amortized against their corresponding streams of income. If the current treatment of physical capital could serve as a benchmark, human capital costs and research and development costs would be amortized according to comparable predetermined schedules. While we prefer amortization of those costs which result in future streams of income, restructuring the corporate tax code to amortize the costs of human capital investment and research and development might be administratively difficult. Short of this, we propose that human capital investment costs be treated comparably with research and development costs.

Nearly all costs of on-going human capital investment are immediately deductible by the firm. Wages of trainees, wages of trainers, educational fringe benefits, and short-lived training materials are all immediately deductible from corporate income. Firms can choose, however, how to expense some costs invested in research and development. At the firm's discretion, costs of research and development can be expensed immediately or amortized against future income. The amortization choice may actually favor investment in research and development depending on whether the firm is earning gains or losses. If the firm faces a loss, the firm must expense human capital investment costs as regular employee compensation but could defer deducting research and development costs in anticipation of gains in subsequent years. We propose that investment in human capital be treated the same way. Firms should have the option of carrying the costs of investment in human capital forward to offset gains in subsequent periods.[18] The research and development tax credit complicates a neutral treatment of the costs of investment in human capital compared to research and development (Eisner, Albert, and Sullivan, 1984). Due to the complicated incentives introduced by the tax credit, further analysis of the tax credit incentives may be warranted. The more general treatment of the costs of investing in human capital and research and development can be made more comparable without explicit consideration of the tax credit.

VI. Conclusions.

Any analysis of tax incentives for education and training should proceed in two steps. First, the analysis should describe those changes necessary to achieve neutrality between education or training and other forms of investment. If some deviations from this neutral ideal are socially desirable, they should be recognized as such. We have concentrated on the first analytical step -- that of distinguishing the neutral tax treatment of human capital investment compared with other forms of investment.

For consistent treatment between human and physical capital investment throughout the tax code, all investment spending should be amortized against earnings when those earnings occur. This neutral treatment should apply to both employee expenditures on the personal income tax and employer expenditures on the corporate income tax. Such a tax system design would be highly complex. Therefore, we do not propose such a solution, though it is conceptually preferable to any other.

Instead, for employee expenditures, we propose that all investment in education and training be immediately and fully deductible against the current wages and salaries of the trainee. We propose that these expenditures be immediately deductible on Schedule A of the personal income tax rather not subject to a two percent expenditure floor. To avoid an adverse distributive impact of the proposal, we propose that the deduction be phased out with higher total reported income. For the same reason, we also propose that the deduction be allowable against earned income only.

For employer expenditures on education and training, we recommend combining training and research and development into one category of expenditure. Our proposal is to treat investment in research and development and human capital identically under the corporate tax code. Since immediate expensing of research and development and human capital investment would be allowable under this proposal, neutrality between investments in human capital and physical capital would not be achieved.

NOTES

1. Purposeful non-neutrality is sometimes a warranted feature of the tax code. Some socially desirable activities may be underproduced in the absence of taxation and, therefore, can be encouraged through the tax code.

2. Also see results summarized in Rosen (1980) and Sgontz (1982).

3. Sgontz (1982) and Stephan (1984) offer good intuitive explanations of this result.

4. A serious shortcoming of existing research is probably the failure to recognize capital market imperfections. Even in a world without tax distortion, one type of investment might be favored over another because of the institutional structure of current capital markets. For example, an eighteen year-old might have reasonable access to educational loans but might find it difficult to find funding for a self-initiated research or capital project. Even if all three possibilities generated equal expected returns, we might expect a bias in favor of educational investment because our society has selected to remedy only the education-related capital market constraint. The distorting consequences of capital market imperfections have not been explicitly considered. These models also assume perfectly mobile labor markets. McNulty (1973) discusses various other reasons why human capital investment might be advantaged under the tax code. Some of these reasons include the tax status of earnings from state and municipal

bonds and the difference between the value of education and the tuition paid by the student.

5. If the education benefits exceeding the limit were current job-related, the employee could deduct the surplus benefits from income using Schedule A.

6. Legislation under consideration in the current Congress would extend the educational income exclusion. Under one form, the legislation (S.260 proposed by Senator Daniel Moynihan) would restore the tax treatment to that existing prior to the recent change and would extend this prior treatment indefinitely.

7. See the 1982 court decision regarding the FAA's "Second Career Training Program."

8. In each case, the retraining expenditures would be deductible from corporate revenue as employee compensation for tax purposes.

9. In defining training expenditures, we are excluding capital equipment purchased for training purposes. Capital equipment used for training is amortized. A special case exists in which other training costs can be amortized. If the training can be considered as a component of firm "start up costs," the training can be amortized (Internal Revenue Service, 1988c).

10. On-the-job training can be integrated into the production process. If so, training components of wages would be inseparable from production components (Stephan, 1984; Doeringer and Piore, 1985). See Doeringer

and Piore (1985) for descriptions of one-the-job and other forms of training.

11. Besides the immediate deductibility of employee wages and salaries paid during employee training time, the Targeted Jobs Tax Credit might be interpreted as a tax subsidy for human capital investment in specific circumstances. In general, the Targeted Jobs Tax Credit is intended to be an incentive for employers to hire members of particular groups. Members of these designated groups are those thought to experience particular difficulty in finding employment. The tax credit currently allows employers to credit 40 percent of the first $6,000 in first-year wages paid to members of these designated groups against the employer's total tax liability (Internal Revenue Service, 1988c; Daily Tax Report, 1989). The requirement that the credit only apply to first-year wages is meant as an incentive to hiring. A recent report issued by the National Commission for Employment Policy argues that this feature might not be a successful incentive to hiring during the time period studied, 1982 to 1987 (Daily Tax Report, 1989). In theory, however, employers who would hire workers from these designated groups as regular trainees, would also receive a substantial federal subsidy on training wages paid under the tax credit. Rather than the ordinary tax advantage of training costs (in this case, some portion of wages) being fully and immediately deductible, the tax credit allows even more of an incentive to training. A percentage of training wages, rather than being deductible, is credited directly against the employer's federal corporate tax liability. This training subsidy only occurs when the

subsidized wages represent training wages. In cases where an employer may hire "disadvantaged" workers for jobs requiring no simultaneous training, the tax credit subsidizes production wages only and not training wages. In most cases, the tax credit will subsidize some combination of production and training. The tax credit provision is scheduled to end as of the end of tax year 1989. The credit cannot apply to wages subsidized by another federal training program.

12. Eisner, Albert, and Sullivan (1984) argue that the research tax credit does not subsidize expansion of research and development in all cases. Because all research and development is measured in nominal dollars, the tax credit may be allowed when no real increase in research and development has occurred. The three year averaging may also introduce some unintended incentives since increasing research and development currently increases the base in future years, thus possibly limiting future tax credits.

13. See McNulty (1973) for an explanation of this problem and some proposed remedies.

14. McNulty (1973) discusses the advantages and disadvantages of this approach.

15. See McNulty (1973) for further discussion of the impacts of these proposals.

16. Such a proposal has been made by Richard Goode (1976). McNulty (1973) also agreed with the amortization proposal if the specified tax

objective is to change the tax code toward more accurate measurement of Haig-Simons income.

17. The amortization proposal contrasts with that recently put forth by Gross (1988). Gross argues that the current tax code favors education financed by home mortgage debt relative to other forms of educational debt. He further argues that human capital investment components should be deducted from earned income in theory. However, Gross believes that such a treatment is administratively infeasible and therefore, advocates that educational debt be exempted from the phase-out of consumer interest deductibility. As such, his proposal might be considered a "next best" solution to the problem on the grounds that a purer treatment is administratively impossible. Our proposal challenges this infeasibility assertion and suggests a possible way in which human capital investment might be treated more comparably with physical capital investment while removing the inefficiency arising when equivalent forms of educational investment are treated differently.

18. This may be complicated since firms may be unable to separate costs of one-the-job training from compensation for production. As a result, amortization of training is most likely to be applied to firm spending on educational assistance for employees or other easily separable training costs.

REFERENCES

"A Complete Guide to the Technical and Miscellaneous Revenue Act of 1988." In *Federal Taxes*, Bulletin 49 Extra. Englewood Cliffs, NJ: Prentice Hall, Inc., 1988.

Becker, Gary S. *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education*, 2nd ed. New York: Columbia University Press for National Bureau of Economic Research, 1975.

Bernstein, Allen. *1989 Tax Guide for College Teachers and Other College Personnel*. College Park, MD: Academic Information Service, Inc., 1988.

Boskin, Michael J. "Notes on the Tax Treatment of Human Capital." In *Conference on Tax Research 1975*. Washington, DC: U.S. Department of the Treasury, 1975.

Doeringer, Peter B., and Michael J. Piore. *Internal Labor Markets and Manpower Analysis*. Armonk, NY: M. E. Sharpe, Inc., 1985.

Eaton, Jonathan and Harvey S. Rosen. "Taxation, Human Capital, and Uncertainty." *American Economic Review* 70(September 1980): 705-715.

Eisner, Robert, Steven H. Albert, and Martin A. Sullivan. "The New Incremental Tax Credit for R&D: Incentive or Disincentive?" *National Tax Journal* 37(June 1984): 171-183.

Ernst & Whinney. *Tax Notes* (July 1988).

Goode, Richard. *The Individual Income Tax*. Washington, DC: The Brookings Institution, 1976.

Gould, Carole. "Paying for Employee Education Benefits." *New York Times*. March 12, 1989.

Gross, Clifford. "Tax Treatment of Education Expenses: Perspectives from Normative Theory." *University of Chicago Law Review* 55(Summer 1988): 916-942.

Heckman, James J. "A Life-Cycle Model of Earnings, Learning, and Consumption." *Journal of Political Economy* 84(August 1976): S11-S44.

Internal Revenue Service. *Educational Expenses*. Washington, DC: U.S. Department of the Treasury, 1988a. Publication 508.

Internal Revenue Service. *Miscellaneous Deductions*. Washington, DC: U.S. Department of the Treasury, 1988b. Publication 529.

Internal Revenue Service. Statistics of Income: 1984 Corporation Income Tax Returns. Washington, DC: U.S. Department of the Treasury, 1987. Publication 16.

Internal Revenue Service. Tax Guide for Small Business. Washington, DC: U.S. Department of the Treasury, 1988c. Publication 334.

Internal Revenue Service. Your Federal Income Tax. Washington, DC: U.S. Department of the Treasury, 1988d. Publication 17.

Kelman, Mark G. "Personal Deductions Revisited: Why They Fit Poorly in an 'Ideal' Income Tax and Why They Fit Worse in a Far from Ideal World." Stanford Law Review 31(May 1979): 831-883.

Kramer, John R. "Will Legal Education Remain Affordable, By Whom, and How?" Duke Law Journal 1987(April 1987): 240-275.

Levitan, Sar A. and Frank Gallo. "Individual Accounts for Training: A New But Not Improved Idea." Labor Law Journal 37(December 1986): 841-848.

Madoff, Ray D. "Back to School After the Tax Reform Act of 1986: Effect of the New Law on Educational Funding." Taxes 65(September 1987): 570-574.

McNulty, John K. "Tax Policy and Tuition Credit Legislation: Federal Income Tax Allowances for Personal Costs of Higher Education." California Law Review 61(January 1973): 1-80.

1989 U.S. Master Tax Guide, 72nd edition. In Standard Tax Reports. Chicago, IL: Commerce Clearing House, Inc., 1988.

Office of Tax Analysis. Report to the Congress on Certain Employee Benefits not Subject to Federal Income Tax. Washington, DC: U.S. Department of the Treasury, June 1988.

Rosen, Harvey S. "What is Labor Supply and Do Taxes Affect It?" American Economic Review 70(May 1980): 171-176.

Schultz, Theodore W. "Investment in Human Capital." American Economic Review 51(March 1961): 1-17.

Sgontz, L. G. "Does the Income Tax Favor Human Capital?" National Tax Journal 35(1982): 99-104.

Simons, Henry C. Personal Income Taxation: The Definition of Income as a Problem of Fiscal Policy. Chicago, IL: University of Chicago Press, 1938.

Standard Federal Tax Reporter. Chicago, IL: Commerce Clearing House, Inc.

Stephan, Paul B. III. "Federal Income Taxation and Human Capital." *Virginia Law Review* 70(October 1984): 1357-1427.

Stephan, Paula E. "The Impact of Income Taxes on Labor's Productivity: A Human Capital Approach." *Public Finance Quarterly* 3(October 1975): 361-379.

"Study Says Targeted Jobs Tax Credit is Necessary, But Needs Improvement." *Daily Tax Report*, February 17, 1989.

Technical and Miscellaneous Revenue Act of 1988: Law and Explanation. Chicago, IL: Commerce Clearing House, Inc., November 21, 1988.

U.S. Congress. *Employment in the Year 2000: A Candid Look at Our Future*. Hearings before the Subcommittee on Investment, Jobs, and Prices of the Joint Economic Committee, Senate Hearing 100-728, 100th Congress, 2nd session, April 11, 12, 18, and 19, 1988.

Warren, Alvin. "Would a Consumption Tax Be Fairer Than an Income Tax?" *Yale Law Journal* 89(May 1980): 1081-1124.

White, Patrick E. "When Must an Employer Withhold on Educational Assistance Payments?" *Journal of Taxation* 70(March 1989): 162-165.

15. THE UNEMPLOYMENT EXPERIENCE OF THE WORKFORCE

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15. THE UNEMPLOYMENT EXPERIENCE OF THE WORKFORCE

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The current economic recovery breaks a trend dating back to 1969 of rising unemployment rates at each stage of the business cycle. The current good news allows some breathing room to consider the sources and policy implications of the unsettling upward trend in the unemployment rate.

This paper reviews evidence of changes in labor supply, labor demand, and market function that might contribute to long-run increases in the unemployment rate. Section I explains some basic unemployment measures, and discusses demographic shifts in the age, gender, race, and education of the labor force. Section II shows the relationship of these demographic shifts to unemployment, and also examines increases in the rate of job loss and in the duration of unemployment. The last section reviews a recently developing area of research on the volatility of labor demand, and discusses the implications of job creation and destruction patterns in the U.S. economy for unemployment.

I. Secular Increases in Aggregate Unemployment Rates

Between 1969 and 1982, the civilian unemployment rate increased secularly. A comparison of the "low" unemployment rates reached in successive recoveries and the "high" unemployment rates in successive recessions indicates this upward drift. Comparing successive recoveries, the "low" unemployment rates reached during those periods were 3.4, 4.8, 5.7 and 7.4 percent respectively. Comparing successive recessions, the "high" rates were 6.0, 8.9, and 10.7 respectively (See Chart 1 and Table 1).[1]

The current economic recovery, the longest peacetime expansion in the post World War II era, has posted a decline in civilian unemployment rates from 10.7 percent in 1982Q4 to 5.3 percent in 1988Q4 (See Chart 1). This latter rate lies below the "low" rate of 5.7 percent associated with the 1975-80 recovery. Has the current recovery ended the general upward drift in unemployment rates? The answer must await the judgement of future cyclical turns in the economy. However, even if the next recession brings a return to the general upward trend, the current recovery will represent a significant break in the pattern.

What lies behind the trends in the overall unemployment rate? As the economy experienced secularly rising unemployment rates over the 1969-82 period, what proportion of those increases can be explained by the shifting composition of the labor force? To what extent were the overall rising unemployment rates simply reflected in rising unemployment rates of various labor force groups? And finally, what has been the impact of the current recovery?

Since 1969, the economy has experienced, among other changes, a dramatic increase in the labor force participation of women, the movement of the baby-boom generation into prime-age groups, and a relative decline in the employment share of the cyclically sensitive industries in the goods-producing sector of the economy.

To capture the influence of these and other trends, the analysis in this section is based on the following stratifications of the unemployed: age, sex, educational attainment, reason for unemployment, industry affiliation of last job, and length of unemployment spell.[2] The goal is to characterize the nature of both the secular rise in unemployment rates over the 1969-82 period and the impact of the current economic recovery. Accordingly, comparisons are made of the respective "low" unemployment rates reached in the successive recoveries of the 1969-88 period. Similarly, comparisons are made of the respective "high" unemployment rates of successive recessions. Owing to the shortness of the mini-recession and recovery between 1980 and 1981, the cyclical points associated with these periods are not included in the analysis.

The broad conclusions drawn in this analysis are as follows:[3]

(1) The secularly rising unemployment rates between 1969 and 1982 had relatively even impacts across demographic groups. Except for the increasing labor force shares of youth in the early seventies, the impact of the changing age and sex composition of the labor force did not make a significant contribution to rising unemployment rates between these dates. When compared to the recoveries over the 1969-1982 period, however, the current recovery is marked by a significant impact of the changing labor force shares of different age groups, especially the declining share of teenagers. In general, the evidence in this paper suggests that the movement of the baby boom cohort into prime age groups with their relatively lower rates of unemployment has tended to decrease the natural rate of unemployment.

(2) Over the entire 1969-88 period, the average level of educational attainment has increased. Over the same time period, the labor force participation rates of individuals with less than 4 years of high school have fallen steadily, while rates of other educational attainment groups have risen. The unemployment rates of each educational attainment group has mirrored the behavior of overall rates. The net effect of these changes on both the rising trend in unemployment rates between 1969 and 1982 and the decline in overall rates between 1979 and 1988 has been neutral. In fact, declines in the labor force shares of individuals with less than 4 years of high school served to

make the overall unemployment rate lower than it otherwise would have been.

(3) Among the various reasons for becoming unemployed, job loss among both sexes increasingly dominated the secularly rising unemployment rates between 1969 and 1982. Over this same period, women reentering the labor force and, to a lesser extent, newly entering females, became increasingly important in explaining changing unemployment rates. This trend has continued into the current recovery.

(4) Overall, while there was a dramatic decrease in the labor force share of the manufacturing sector and a relative increase in the service-producing sector, industry decomposition of the labor force suggests these shifts did not have a significant impact on the secularly rising unemployment rates between 1969 and 1982.

(5) Across the 1969-1982 period, there was a dramatic increase in the proportion of individuals who are long-term unemployed. The current recovery has not reversed this upward drift.

(6) The shift toward long-term unemployment has largely been due to increased representation of 25-44 year-old males and job losers. However, the representation of these groups in long-term unemployment has mirrored their representation in the overall unemployment pool. Finally, this shift has largely been neutral across industry groups; that is, no one industry has experienced disproportionate gains or losses in their share of total long-term unemployment.

A. Some Basic Facts on Unemployment

Each month, the Census Bureau conducts the Current Population Survey (CPS), a survey of about 55,000 households nationwide. The information collected in the survey forms the basis for unemployment statistics. Within the framework of this survey, an individual is unemployed if he or she did not work at all during the survey week, was looking for work in the prior four weeks, and was available for work during the survey reference period. Individuals waiting to be recalled to a job or those waiting to report to a new job within 30 days are also considered unemployed. The civilian unemployment rate equals the proportion of the civilian labor force which is unemployed, where the labor force is the total of employed and unemployed individuals. This measure does not include discouraged workers and others who drop out of the labor force. Nor does it count as unemployed those involuntarily working part-time, or the functionally unemployed kept on a firm's payroll. Obviously, those employed "off the books" in the underground economy are also not counted.

To review the trends in the labor force and unemployment over the 1969-88 period, it is useful to divide the population into major labor force groups. First, a division of the unemployed into groups of teenagers, adult men, and adult women shows that the unemployment rate of teenagers is consistently higher than for either adult males or females (See Chart 2). Further, until 1982, the unemployment rates of adult males were consistently lower than for adult females. Since 1982, equality between the sexes has been the norm. The labor force participation rates of adult men and women overall are also telling. In the post-World War II era, the participation rates have steadily declined for adult men and steadily increased for adult women. The pattern for adult women was particularly sharp over the 1969-82 period. Another significant trend which has developed in the last two decades is the rising proportion of the population that is employed. The employment-population ratio, although sensitive to cyclical swings in the economy, has increased markedly since the 1973-75 recession, especially in the current recovery.

Second, a division of the unemployed by age groups shows that, as expected, unemployment rates decline with age. The civilian labor force shares of individuals in the 16-24 age group peaked in the 1970's. The civilian labor force participation rates of this group increased over the entire three decades, although showing evidence of a slowdown in the 1980's. The civilian labor force share and the participation rates of the 25-34 age group reach plateaus in 1986 and 1987, respectively. As a result of the aging of the baby boom cohort, the labor force shares of the 35-44 age group declined until the mid-seventies and have been increasing since. The labor force participation rates of this group steadily increased over the entire 1960-88 period.

Third, a division of the unemployed by race shows the unemployment rates of blacks tend to be much higher than for whites, while the unemployment rate of Hispanics is generally between that of blacks and whites (See Chart 3).

Fourth, a division of the population by level of educational attainment shows that the average level of educational attainment has increased steadily since 1969. Consistent with this increase has been the steadily falling proportion of the population with less than 4 years of high school, a stable proportion with exactly 4 years of high school, and steady increases in the proportions with 1-3 years of college and 4 years of college of more. The same trends hold true for a division of the labor force into educational attainment groups.

In addition, the unemployment rates of each educational attainment group has mirrored the behavior of overall rates, although the extent of secular increase over the 1969-82 period was most pronounced in groups with educational attainment levels of less than high school and high school only.

Although these divisions of the unemployed into various groups contribute to our understanding of unemployment, our knowledge is enhanced further if we also examine the dynamic flows in and out of unemployment over time. One way to capture these dynamic movements is to measure the average total length of time a newly unemployed individual can expect to remain unemployed.

Although estimates of duration vary, measures of average time spent unemployed are consistently found to be countercyclical. The official measure from the CPS typically ranges between 4 and 12 weeks, and has exhibited a strong secularly increasing pattern over the entire 1969-88 period. This measure, however, captures the average age of unemployment spells among the currently unemployed as of the survey date. Studies of the average total time a currently unemployed individual remains unemployed report estimates in the range of 8 to 16 weeks (Akerlof and Main, 1980). In contrast, studies examining the expected completed spell length of newly unemployed individuals find shorter average spell lengths, in the range of one and one-half to three and one-half months (Sider, 1985; Horrigan, 1987). In these latter studies, the countercyclical nature of duration is evident, but there is no indication of a secularly increasing pattern.

Measures of average spell length are summary statistics, and although informative, do not shed much light on the underlying distribution of spell lengths. In particular, across the entire 1969-1982 period, there was a dramatic secular increase in the proportion of individuals who are long-term unemployed (27 weeks or more). The current recovery has not reversed this upward drift. For example, the percentage of individuals in long-term unemployment spells in 1988Q4 (11.3%) was far above the previous low percentage value recorded in the 1975Q2-1980Q1 recovery (8.3%).

II. Sources of Secular Increases in Unemployment Rates

This section uses a decomposition approach to estimate the degree to which changes in the demographic composition of the labor force have contributed to the secularly increasing unemployment rates between 1969 and 1982, and the effect of demographic factors in the current recovery.[4]

A. Demographic Factors

Table 2 traces the contribution of age groups to the secularly rising unemployment rates between 1969 and 1982, and to the decline in overall rates in the current recovery. There are three noteworthy features to these tables. First, between successive recoveries and successive recessions, it is the changing unemployment rates within age groups which explain the vast majority of changing overall rates. The contribution of changing labor force shares between different age groups is, with few exceptions, very small.

Second, between 1969Q1 and 1973Q2, when baby boomers were entering the 16-19, and to a lesser extent, the 20-24 age groups, the increasing labor force shares of youth exerted upward pressure on overall unemployment rates. Though relatively small, the impact of changing labor force shares over this period is consistent with the fact that unemployment rates of teenagers tend to be substantially higher than for any other group, followed by the unemployment rates of the 20-24 age group.

Third, the decline in labor shares of teenagers between 1979Q2 and 1988Q4 and the demographic movement of the baby boom into prime age groups resulted in a natural rate of unemployment which is lower than it otherwise would have been over the period.

The impacts of changes in the unemployment rates and the labor force shares of men and women are shown in Table 3. Changes in the unemployment rates of the two sex groups explain nearly all of the secular increase in aggregate unemployment rates between 1969 and 1982. A comparison of the declining unemployment rates between the two recovery periods, 1979Q2 and 1988Q4 also indicates the predominant role of changing unemployment rates within each group.[5] Consistent with the fact that labor force participation rates of females have increased substantially, the impact of changing labor force shares between men and women became slightly larger across the successive recoveries and the successive recessions of the 1969-82 period. However, the magnitude of these effects are small. Changes in labor force shares by sex explain very little of the secularly rising unemployment rates over the period.

B. Educational Attainment

As discussed previously, educational attainment levels of the labor force have trended up since 1969. Ceteris paribus, an increase in educational attainment has the effect of putting downward pressure on unemployment rates. However, between 1969 and 1982, the magnitude of this effect is small, overshadowed by secularly increasing unemployment rates within each educational attainment group. While the degree to which unemployment rates trended up was most pronounced for those with less than a high school degree, the pattern for each educational attainment group reflected the movement of the overall unemployment rate.

As a result, a separate comparison of the successive recessions and the successive recoveries between 1969 and 1982 leads to the observation that shifts in the educational attainment of the labor force did not have a pronounced impact on the trend in unemployment rates. The single most important factor was the behavior of unemployment rates within each educational attainment group. Again, a comparison of the 1975Q2-1980Q1 recovery with the current period does not change this conclusion.

C. Reasons for Unemployment

The reasons for being unemployed are divided into four broad categories: job loser, job leaver, reentrant to the labor force, and new entrant to the labor force. The job loser category is further divided into those on layoff and those who are not.

Job loss represents the largest single group in a division of the unemployed by reason for unemployment. Over the 1968-88 period, job losers accounted for an average 47 percent of the unemployed. Over this same time period, those who lost their jobs for reasons other than layoff represented 69 percent of job losers, a sizeable proportion which also exhibited an increasing trend over the period.

The second largest group are reentrants, making up 28 percent of the unemployed on average over the last two decades. The other categories, job leavers and new entrants are smaller in relative size, each representing approximately 13 percent of the unemployed. Across these groups, both categories of job losers tend to be strongly countercyclical, while job leavers are less variable but procyclical. Both new entrants and reentrants to the labor force are procyclical, providing tentative evidence that the added worker effect dominates the discouraged worker effect.

In assessing the contribution of reason for unemployment toward explaining secularly rising unemployment rates, it is not possible to use the decomposition approach employed above. This approach requires estimating the size of the labor force of each group which, of course, is not possible for this particular stratification of the unemployed. Instead, the overall unemployment rate was expressed as the sum of ratios, where each ratio is the level of unemployment by reason, divided by the size of the overall labor force. A change in unemployment rates can then be expressed as the sum of changes in these ratios.

Applying this technique, the job loser category clearly dominated the upward drift in unemployment rates over the 1969-82 period, and in proportions which are much greater that their representation among the unemployed. The next most significant group were reentrants to the labor force, especially through the mid to late seventies. It has been suggested that the reentrant category is dominated by job losers. The extent to which this is true further strengthens the impact of job loss on the secular rise in unemployment over the period.

In addition, the decline in unemployment rates between 1979Q2 and 1988Q4, the comparison dates for the 1975-1980 recovery and the current period, reveals a notable shift toward the reentrant and new entrant categories in explaining the decline in unemployment rates between these two periods.[6]

D. Industry Groups

The decomposition of industry unemployment rates does not support the view that the shift between the goods-producing sector (especially manufacturing), and the service-producing sector was the cause of secularly rising unemployment rates over the 1969-82 period. In each comparison over this period, the effect of changing labor force shares by industrial affiliation is insignificant. In contrast, a comparison of the current recovery with the 1975-79 period does show a slightly greater effect of shifting labor force shares across industries. In all, labor force shifts across industries account at most 9 percent of the reduction in overall unemployment rates between 1979Q2 and 1988Q4.

To understand these results, it is particularly important to account for changes in both industry unemployment rates and the relative share of the civilian labor force within each industry. The patterns in manufacturing are a case in point. Over the 1969-82 period, manufacturing's share of the labor force fell steadily over time from 36.9 percent in 1969Q3 to 27.3 percent in 1982Q4. By 1988Q4, this figure had fallen further to 24.1 percent. As well, over the 1969-82 period, the unemployment rates within manufacturing were posting secular increases. These rates have fallen markedly in the current recovery--from a high of 14.2 percent in 1982Q4 to 5.2 percent in 1988Q4, matching the low reached during the 1975-79 recovery.

The decline in the industry's relative share over the 1969-82 period acts to diminish its percentage contribution to explaining secularly rising unemployment rates. However, the secularly rising unemployment rates within the industry acts in the opposite direction.

In other words, within manufacturing, unemployment rates increased secularly over the 1969-82 period, although a smaller proportion of the civilian labor force was in manufacturing. Which effect dominated? As it turns out, the decline in manufacturing's labor force share did little to offset changes in manufacturing unemployment rates. One exception to this occurred in the comparison between 1975Q2 and 1982Q4 in which the declining labor force share nearly offset the rising unemployment rates in manufacturing between the two periods.

Turning to the service-producing sector, labor force shares in this sector have been rising since the early seventies. In particular, average civilian labor force shares in the finance and services industries have risen from 26.0 percent in 1969Q3 to 32.3 percent in 1982Q4. By 1988Q4 this figure had risen to 35.9 percent. As with the manufacturing sector, unemployment rates in the service-producing sector trended upward over the 1969-82 period, falling during the current recovery to 4.4 percent in 1988Q4, below the low posted during the 1975-79 recovery. Moreover, unemployment rates in the service-producing sector, especially in the finance and services industries, are consistently lower than overall nonagricultural unemployment rates. Over the 1969-88 period, the average unemployment rate in the finance and services industries was 5.3 percent, compared to the 6.8 percent rate overall.

As with manufacturing, changing unemployment rates were of greater relative importance than changing labor force shares. One exception, also consistent with manufacturing, was the greater relative impact of labor force shares as compared to changing unemployment rates in the sector between 1975Q2 and 1982Q2.

When the shifts in labor force composition by industry are taken as a whole, however, their net impact on the secularly rising unemployment rates of the 1969-82 period are not significant. Changes in industry unemployment rates explain nearly all of the trend.

Finally, although the current recovery shows a slightly greater impact of shifting labor force shares than in any other comparison period (nearly 9 percent), changing unemployment rates still account for nearly 75 percent of the fall in unemployment rates between 1979Q2 and 1988Q4.

E. Length of Unemployment

One of the most striking aspects of the 1969-88 period is the secular increase in the proportion of the currently unemployed who have been unemployed for 27 weeks or longer, or long-term unemployment.[7] Chart 4 demonstrates the pattern. Indeed, as of the fourth quarter of 1988, the percentage of the unemployed in long-term spells (11.3%) remains higher than the low value associated with the 1975-1980 recovery (8.3%). Although not shown in Chart 4, the same pattern emerges for those unemployed 15 weeks or longer or 52 weeks or longer.[8]

As is generally the case, the composition of the long-term unemployed over the 1969-88 period has differed considerably from the makeup of total unemployment. Membership in long-term unemployment is more likely to be comprised of prime-age and older males, job losers, and workers from cyclically sensitive industries such as manufacturing than are the unemployed as a whole.

The question of interest in this analysis is the extent to which the secular increase in the relative size of long-term unemployment has also changed the composition of the long-term unemployed. For example, has the degree to which job losers are overrepresented in long-term unemployment changed appreciably as the percentage of individuals in long-term spells has increased?

To analyze what lies behind the shift to long-term unemployment, annual average values of the relative number of individuals who are newly, short-term, medium-term, and long-term unemployed were constructed. These estimates were broken down by age, sex, race, reason for unemployment, and industry affiliation of last job.

The following general conclusions emerge: First, over the entire 1969-88 period, two groups were represented disproportionately, 25-44 year-old males and job losers. However, even though these two groups normally make up a disproportionate share of long-term unemployment, their degree of overrepresentation has not changed over time.

Second, the industry composition of the long-term unemployed was also fairly neutral; that is, the burden of long-term unemployment, while always falling disproportionately on individuals from cyclically sensitive industries, did not shift noticeably between groups defined by industry affiliation (See Table 4). The one exception to this latter result is the relative shift which occurred within durable goods industries in terms of their representation among the long-term unemployed. In particular, over the 1969-88 period, manufacturing's share of the long-term group fell while that of construction and mining rose. Aside from these shifts, the remaining industry groups did not exhibit either a growing or falling trend (See Table 4).

The importance of these findings is underscored by the recent work of Summers (1986) and of Topel and Murphy (1986)[9] who view the shift toward long-term unemployment as the main reason underlying the secular increase in unemployment between 1969 and 1982. Despite a decline in the proportion of the unemployed receiving unemployment insurance benefits, unemployment spells have become longer. Increases in wage dispersion and increases in the proportion of working spouses, along with the unusual sectoral shocks of recent years, may have led displaced workers to search longer while unemployed.

F. Time Spent Unemployed

What is the implication of the shift in the distribution of time unemployed toward individuals with longer spells as to the burden of unemployment on the average individual? One might reasonably postulate this evidence indicates the average individual is experiencing spells of longer duration. Because of the dynamic nature of unemployment, however, this is not necessarily the case.[10] The division of the unemployed into long, medium, short and newly unemployed groups is a division of the currently unemployed. However, the currently unemployed at any survey date represent only the *remaining* members of all previous *newly* unemployed groups. It is misleading to use information on the currently unemployed to judge how long a member of newly unemployed group remains unemployed.

How then have the dynamics of unemployment worked over the 1969-88 period? As individuals entered unemployment over these years, what happened to their likelihood of experiencing a long spell of unemployment? To answer this latter question, the percentage of newly unemployed individuals (that is, those with less than 5 weeks of unemployment at a survey date) remaining unemployed at least 8 months was calculated.[11] This statistic was calculated for newly unemployed groups on a monthly basis for the low unemployment rate years (1969, 1973, 1979, and 1988), as well as for the high unemployment rate years (1971, 1973, and 1982). Annual averages of these probabilities are reported in Table 5. The trend which emerges is striking. The probability of a newly unemployed individual reaching an 8th month of unemployment rose secularly over the successive recessions and recoveries of the 1969-82 period. A comparison of the current recovery with the one between 1975 and 1979 shows a decline in this percentage, indicating a possible break to the general upward trend in the statistic.

The second piece of evidence comes from a study by Darby, et al., (1987), which calculates the average probability of leaving unemployment from one month to the next for various demographic groups. One of their principal findings is that this probability "tends to be low in manufacturing and construction, and high in non-industrial sectors of the economy" (Darby et al., 1987, p. 32). They also conclude that the probability of leaving unemployment tends to decrease with age, is higher for women than men, and among reasons for unemployment, is lowest for individuals on permanent layoff.

A drawback of the Darby et al. study, one that reflects a limitation of the Current Population Survey, is the inability to determine if individuals exit unemployment by finding employment or by withdrawing from the labor force. There is a clear need for the development of better longitudinal information on individuals. Such data would make it easier to follow individuals between labor market states and improve our understanding of the dynamics of the labor force.

III. The Demand for Labor

Unemployment can be viewed as arising from insufficient aggregate demand, or from structural and frictional mismatches. One symptom of structural/frictional unemployment is that both the unemployment rate and the vacancy rate are high. People are looking for work at the same time that employers are looking for workers. Because of poor information, or geographic or skill mismatches, vacancies and unemployment coexist.

During the last two decades major structural shocks include the oil shocks of 1973 and 1978, and the trade shocks accompanying the exchange rate shifts of the early 1980s. Low value-added sectors of U.S. manufacturing were particularly sensitive to the trade shocks. Structural changes in the regional distribution of U.S. employment growth also appears to have contributed to rising unemployment (Medoff, 1983). While structural shocks that create the need for labor reallocation across industry lines are more likely to result in unemployment, most employment fluctuation occurs within rather than across industries (Leonard, 1987 & 1988). The resulting frictional unemployment may be increasing.

The degree of structural/frictional unemployment in the U.S. may be far larger than commonly supposed. Leonard (1987) reports that in an average year at the beginning of the 1980s, one in every nine jobs was destroyed, while one in every eight was newly created. These substantial rates of job turnover change slightly over the business cycle, and were of comparable magnitude in most industries. The job gain rate is calculated as the net jobs added at growing establishments from one year to the next, divided by total employment in the initial year. Job loss is symmetrically defined, and ignores both employment fluctuations shorter in length than the period between observations, and job loss that is offset within the establishment. For the manufacturing sector, Davis and Haltiwanger (D&H, 1989) report that in an average quarter during the early 1980s, 6 percent of all jobs disappear, and 5 percent are created. From year to year D&H report 8 percent job gain and 13 percent job loss rates. These are similar in magnitude to Leonard's findings for the population of private employers (including non-manufacturing) in one state. However, Leonard does find evidence that more jobs are gained than lost, which is consistent with the history of net job creation in the U.S.

Net job creation is simply the sum of the rates of job gain and loss. It ranges from 20 to 33 percent in annual data, and is even higher across shorter time periods because of transient short-term fluctuations in employment. This suggests a much more turbulent labor market than is apparent from aggregate statistics of smooth and small net employment changes. In other words, net employment growth on the order of 3 percent is the result of much larger gross flows. Roughly 45 percent of all establishments grow by an average of 30 percent, 47 percent of all establishments shrink by on average 21 percent, and the remaining 8 percent of establishments maintain stable employment (Leonard, 1987). Employment levels are anything but stable at the typical establishment. Unemployment rates on the order of 6 percent then suggest a remarkably fluid and adaptable labor force in the face of the annual disappearance of 10 to 25 percent of all jobs.

The rates of job creation and destruction calculated from periodic counts of total establishment employment are of similar magnitude to annual rates of new hires and layoffs previously collected by the BLS. Between one-third and three-quarters of the new hires and layoffs rates can be accounted for by job creation and destruction (Leonard, 1987). The job destruction rates are also comparable in magnitude to the flow from employment to nonemployment reported by individuals in the CPS (Leonard, 1987).

If all who desire stable long-term employment can find it, or are compensated for bearing the risk of unstable jobs, there is little room for government intervention. There are, however, a number of reasons to think this is not the case. Job turnover at the establishment level depends on the path of employment over time, but this is very difficult to predict (Leonard, 1987, 1988). There is tremendous heterogeneity in employment growth rates not only across different establishments, but also for the same establishment over time. It is difficult to segregate establishments into stable and unstable groupings. Small employers do tend to be more unstable, but their small size makes it less likely that they develop widespread reputations. There is only weak evidence that a compensating differential is paid for employment in unstable jobs (Abowd & Ashenfelter, 1981). The shock often expressed by workers displaced from jobs they believed to be permanent is evidence that unstable workers have very imperfect information on which jobs are stable and which are not.

The data on job destruction can be used to augment the sketchy data on job duration. If 6 percent of jobs disappear each quarter (D&H, 1989) in steady state with homogeneous jobs, then a job is expected to last just over 4 years. This refers not to a job-worker match, but to the existence of the job itself irrespective of who fills it. Jobs of such limited duration are likely to frequently fall short of the duration desired by workers. However, job loss is not evenly distributed. Newly created jobs in new firms suffer from high infant mortality rates. It is possible for high turnover rates to coexist with a high proportion of stable jobs, if turnover is concentrated in a few positions. While the data required to determine the concentration of turnover are currently unavailable, job turnover of roughly similar magnitude appears to be a pervasive phenomenon across industries, regions, size classes, and many countries (Leonard, 1986, 1987 & 1988; D&H, 1989; OECD, 1988).

Job growth has a large transient component that is more pronounced in shorter time intervals. When measured on an annual basis, job loss rates appear to be in a narrow range from 11 (Leonard, 1987) to 13 (D&H, 1989) percent. In steady state, this yields expected job durations of 7 to 9 years. At the other extreme, comparing employment levels 5 years apart, Dunne, Roberts, and Samuelson (1987) report that the average job in manufacturing lasts about 20 years. This is almost certainly an overestimate because the short duration jobs that are born and die between censuses are not counted at all, and because job loss is not counted if other employment shifts leave establishment size unchanged. Using data on individual workers, Hall (1982) reports that the expected median tenure of a worker in 1978 was about 8 years (completed spell). It seems likely that the high rate of job destruction contributes to short duration job-worker matches. While most workers eventually find their way into long duration jobs, they typically first transit through a number of short duration jobs, not all of which are mismatches. The rate of annual job loss is not trivial. It may account for a substantial part of the underlying rate of unemployment. This is often referred to as the "natural" rate of unemployment. Being "natural" it is often thought of as an irreducible part of a normally functioning economy or, alternatively, not thought of at all. To illustrate, suppose the 6 percent quarterly job loss rate calculated by D&H applies in steady state to the whole economy, and captures all job loss. (In reality it will miss short duration jobs and job turnover that leaves establishment size unchanged.) This amounts to an annualized 24 percent rate of job loss. Suppose only half of this job loss results in any unemployment, and that a completed unemployment spell lasts 3 months. This yields an unemployment rate of 3 percent, or two-fifths of the 7.5 percent average unemployment rate during the 1980s.

A number of factors have led to speculation that the "natural" rate of unemployment is now lower than before. As we have already mentioned, the teenage proportion of the labor force has declined. In addition, unions represent a lower percentage of the workforce, and have recently been less aggressive in pursuing wage gains. The U.S. economy has become more open to international competition, which along with the deregulation of some major industries increases competitive constraints on wages. The reorganization of large corporations, with a growing "informal" sector of arms-length, part-time, or sub-contracted workers to accommodate peak demands may also help lower the unemployment rate attainable before inflation accelerates. The next section asks whether these factors leading to a reduction in the "natural" rate may have been outweighed by the increasing instability of jobs.

A. Changes Over Time

Is the underlying rate of unemployment higher today than in previous years because all jobs have become more unstable, perhaps because of faster technological change, a more open economy, or more competitive markets? The available historical data do not extend far enough back to give adequate perspective on this question. Based on quarterly data in the manufacturing sector, the annualized job turnover rate ranges from 33 (1979) to 53 (1982) percent (D&H, 1989). The annualized rate of job loss rises from 16 percent in 1979 to 33 percent in 1982, before falling to 21 percent in 1983, and so appears cyclical. Job gain rates also increase from 17 percent in 1979 to 25 percent in 1983 (D&H, 1989).

Using annual data on Wisconsin establishments, Leonard (1987) finds job turnover rates rising from 22 percent in 1979 to 34 percent in 1982, but again over too short a time period to discern a clear pattern. Job loss rates range from 7 percent in 1978 to 16 percent in 1982. Job gain rates range from 9 percent in 1981 to 18 percent in 1982. In a national sample of larger firms between 1978 and 1984, there is no strong evidence that the variance of establishment growth rates has increased over time (Leonard, 1988). While none of this evidence allows us to compare present conditions with those of the 1960s, it would be useful if such information were systematically collected so that we could tell whether increases in unemployment were due to a more challenging world (more unstable jobs), or to less success in meeting a constant challenge.

There is considerable evidence that the reallocation of labor across industries increases with (and may account for part of) the business cycle. Increases in the unemployment rate are associated with more uneven growth across industries (Lilien, 1982). In part this reflects the greater cyclical sensitivity of the manufacturing sector (Abraham and Katz, 1986). It may also indicate the transmission of shocks, such as the oil price increases of 1973 and 1978 through the manufacturing sector to the economy as a whole (Hamilton, 1988). In any event, much of the increase in unemployment during a recession is accounted for by the loss of manufacturing jobs. The evidence on cyclical changes in job turnover is sketchy and mixed. Leonard (1987) reports weak evidence that the variance of growth rates across establishments rises with the unemployment rate. Industries with the fastest growth rates also appear to have the most dispersed growth rates. For manufacturing plants, Davis and Haltiwanger (1989) report a contrasting result: the job turnover rate is lower when industry growth is greater. If true, this suggests that employment growth not only reduces unemployment directly, but also indirectly by reducing labor reallocation across plants within industry.

B. Job Stability by Industry

Shifts in labor demand derived from shifts in consumer demand, technological innovation, or trade or regulation changes, have had different effects on trend growth rates across industry. The role such factors play in accounting for differences in job stability across industry is less well clear. Job instability appears to be a pervasive phenomenon, with relatively minor differences across industries that yield few clues to suggest specific causes. Job instability is not limited to a few industries or regions, to the manufacturing sector, to unionized plants, to industries subject to rapid technological change, or even to nations with certain regulatory structures (Leonard, 1986, 1987, & 1988; OECD, 1988).

Within manufacturing, average annual job turnover rates between 1980 and 1983 range from 14 percent in the paper industry, to 27 percent in the lumber industry. Job loss rates range from 8 percent in tobacco and in paper, up to 17 percent in lumber. Job gain rates range from 4 percent in primary metals to 11 percent in apparel (D&H). It is notable that the most unstable industry, lumber, is also among the least affected by technological change, by import competition, or by shifts in consumer demand across differentiated products. Two industries commonly viewed as undergoing rapid technological change, chemicals and electrical machinery, have job turnover rates that are respectively below and slightly above average (D&H). Similarly, exposure to recent upheavals in trade and exchange rate fluctuations do not strongly differentiate industry turnover patterns. Primary metals and transportation equipment, around which many trade battles have been fought, have job turnover rates one percentage point below and above the mean, respectively. The instability of jobs in the apparel industry presents a stronger case for trade pressures, although it may simply reflect an industry of smaller plants dependent on changing tastes.

Certain industries, particularly in durable goods manufacturing, are more sensitive to the business cycle. Their job turnover rates vary more over time. The highest time-series variance of job turnover are found in primary metals, non-electrical machinery, apparel and lumber (D&H, 1989). Except for apparel, the outputs from these industries are all inputs into long-term investments that are known to be sensitive to the interest rate. Apparel is unusual among this group. It has high and variable turnover rates, for reasons already mentioned.

Some evidence suggests that job loss within industry becomes more concentrated in a few plants as industry or economy wide employment declines (D&H, 1989). A growing industry or economy tends to spread employment growth more evenly across plants, reducing the variance of growth rates. The tendency of job losses to be concentrated in fewer plants during a downturn perhaps helps explain recent support for plant closing legislation, even though plant closings account for no more than 15 percent of all jobs lost from quarter to quarter, or from 17 to 38 percent of annual job loss (D&H). The contribution of plant closings is smaller in quarterly than in annual data because transient employment changes play a larger role across shorter time periods.

The long-run employment trend in industrialized countries out of manufacturing and into services is well-known. This is expected to reduce cyclical unemployment because the service sector is generally less cyclically sensitive than is manufacturing. Indeed, job turnover rates do vary less over the business cycle in services than in manufacturing (Leonard, 1987). However, at any point in time, service sector jobs are less stable than those in manufacturing. The movement from manufacturing to services is a move to jobs that are more stable over the cycle, but less stable at any point in the cycle. This should make cyclical stabilization policies easier to pursue, but raise the difficulty of reducing steady-state rates of unemployment.

More flexible wages are commonly proposed as a means of reducing employment fluctuations in the face of volatile demand. Union plants are often thought to have wages that are not only too high, but also too rigid. Employment does appear to grow less rapidly, if at all, in union plants. However, apart from this trend, union jobs appear no more unstable over time than do similar non-union jobs (Leonard, 1985). This suggests either that the role of wage rigidity has been overemphasized, or else that rather than being a problem unique to the union sector, it is widespread among large plants irrespective of unionization.

The occupational mix within a plant affects both its growth and its stability. Within industry, employment growth rates are significantly faster in plants with a greater proportion of white-collar workers (Leonard, 1988). In part, this may reflect a U.S. comparative advantage in skill-intensive products. There is little reason to expect the U.S to compete successfully in industries requiring neither physical nor human capital against countries well-endowed with unskilled labor. To compete successfully in capital intensive industries will require continued investments in technological advance, education, and other capital improvements. The necessity of considering such investments is heightened in view of hints of a coming mismatch between the skills required by growing industries and those supplied by the next generation (U.S. B.L.S., 1987). Already, returns to education are rising. A growing share of the workforce will be composed of groups, such as Hispanics, that have typically had lower education levels than average. Investments in education will tend to reduce social divisiveness and improve future productivity (Leonard, 1989).

More skilled jobs also appear to be more stable. Employment levels fluctuate less over time in establishments with a higher proportion of white-collar workers (Leonard, 1988). In part because of the more durable bonds between workers and employers with joint investments in firm specific skills, white collar workers are less likely to be displaced (Oi, 1962).

C. Useful Information

The types of unemployment discussed here point towards additional information that would help show where the problem of unemployment lies. Some information is already collected by the government for other purposes, and merely needs to be reorganized and made more accessible. Other information might only be available through additional data collection.

First, consider making fuller use of information that already sits deep within various federal and state bureaucracies. Start with an obscure, but perhaps for that very reason, typical example. Data on separations and accessions at the plant level can be useful in judging flows into and out of unemployment. In the past, such information was collected and published by the Department of Labor, but fell victim to budget restraints. Less well known is that such data continues to be collected by another branch of the Department of Labor for a fragmentary but not insubstantial sample, as part of the Department's mandated responsibilities to enforce the contract compliance program.

The studies by D&H (1989) and by Dunne, Roberts, and Samuelson (1989) demonstrate innovative uses of the Longitudinal Establishment Data set recently put together by the Census Bureau at relatively modest additional cost from annual data already collected. By constructing a longitudinal file, plants can be followed over time, allowing measures of flows into and out of employment. Similar analyses have been performed using data collected by federal and state governments for other purposes. Job turnover among large employers can be calculated from Equal Employment Opportunity data (Leonard, 1986). Data collected by the states to administer the Unemployment Insurance program can also be used to measure job growth and turnover (Leonard, 1987).

These all represent creative ways of patching together a makeshift bridge over a gaping hole in U.S. data collection. While the government conducts, supports, and makes publicly available a number of very useful surveys of people (the Census of Population, the Current Population Survey, the National Longitudinal Survey, the Survey of Income and Program Participation), no such survey of employers is publicly available. A number of European governments appear much better informed in this regard. This one-sided data has subtly, but significantly, affected research and policy. For example, much of the debate over unemployment has been framed in terms of the characteristics of people: their education, experience, race, sex, and age. Until recently, relatively little evidence could be marshalled about the instability of jobs themselves, although such evidence may shift the ways we think about unemployment and our policies to combat it. Policies directed toward altering employers incentives or information, or improving employer-employee matches have had much less prominence than manpower training programs. A publicly available employer survey might usefully contribute to the analysis of employment problems by making information available on employment flows including accessions, separations, vacancies, vacancy durations, and applicant queues. Data on levels and changes of wages, benefits, and employment, as well as on tenure, industry, region, occupational mix, corporate structure, inventories, back-orders, geographic and industry scope of marketing, and production plans are all potentially useful. To give one example, vacancy data are routinely collected in the U.K, making it possible to differentiate cyclical from structural unemployment. These data may also provide a useful guide for government efforts to redirect the unemployed to sectors with many openings. The available data on net employment growth by industry underestimates job openings because even in a declining industry, one-third of the establishments are growing, and even in industries where total employment is shrinking by at least 5 percent, gross job creation typically exceeds 7 percent. Ideally, a matched employer-employee survey would allow analysis of how changes in labor market opportunities affect unemployment and earnings over the working life.

To help provide an informed basis for policy, this paper has focused on the sources and nature of unemployment. The general policy options for reducing unemployment include: 1) increasing aggregate demand through fiscal policy, 2) increasing investments in education and training, 3) improving information on job availability and persistence, 4) reducing barriers to geographic, industry and occupational mobility, and 5) increasing the flexible use of labor within firms. Long-run reductions in the unemployment rate require policies (such as 2-5) that reduce structural and frictional unemployment. These problems develop slowly and rarely present themselves with crisis intensity. This review of the unemployment experience of the last few decades suggests that persistent investments in such long-term policies offer prospects for reducing unemployment.

TABLES

Table 1a. "Low" unemployment rates associated with the business cycle recoveries of the 1969-88 period, seasonally adjusted, quarterly averages

Recovery period	"low" unemployment rate quarter	unemployment rate
1961Q1-1969Q4	1969Q1	3.4
1970Q4-1973Q4	1973Q3	4.8
1975Q1-1980Q1	1979Q2	5.7
1980Q3-1981Q3*	1980Q4	7.4
1982Q4-1988Q4**	1988Q4	5.3

Table 1b. "High" unemployment rates associated with the business cycle recessions of the 1969-88 period, seasonally adjusted, quarterly averages

Recessionary period	"high" unemployment rate quarter	unemployment rate
1969Q4-1970Q4	1971Q3	6.0
1973Q4-1975Q1	1975Q2	8.9
1980Q1-1980Q3*	1980Q3	7.7
1981Q3-1982Q4	1982Q4	10.7

* Owing to the shortness of the recovery and recession which occurred between 1980 and 1981, the unemployment rates reached in these periods are not included in the analysis

** The recovery which began in 1982Q4 is still underway as of the time of this writing

Table 2a. Percentage decomposition of the total increase in "low" unemployment rates between successive recoveries by age

Comparison dates	Percent contribution total	due to changing weights	due to changing unemployment rates	inter-action effects
1969Q1-1973Q3	100.0	14.3	79.5	6.3
1973Q3-1979Q2	100.0	8.0	91.8	0.3
1979Q2-1988Q4	100.0	132.9	-12.9	-19.9

Table 2b. Percentage decomposition of the total increase in "high" unemployment rates between successive recessions by age

Comparison dates	total	Percent contribution due to changing weights	due to changing unemployment rates	inter-action effects
1971Q3-1975Q2	100.0	6.9	90.7	2.5
1975Q2-1982Q4	100.0	-8.4	105.4	3.0

Table 3a. Percentage decomposition of the total increase in "low" unemployment rates between successive recoveries by sex

	Percent contribution			
Comparison dates	total	due to changing weights	due to changing unemployment rates	inter-action effects
1969Q1-1973Q3	100.0	2.2	97.7	0.1
1973Q3-1979Q2	100.0	6.6	93.8	-0.3
1979Q2-1988Q4	100.0	-17.4	99.1	18.4

Table 3b. Percentage decomposition of the total increase in "high" unemployment rates between successive recessions by sex

	Percent contribution			
Comparison dates	total	due to changing weights	due to changing unemployment rates	inter-action effects
1971Q3-1975Q2	100.0	1.0	99.2	-0.2
1975Q2-1982Q4	100.0	2.4	101.7	-4.1

Table 4a. Breakdown of long-term unemployment by industry, for selected "low" unemployment rate years over the 1969-88 period, annual averages*

		Percentage of the long-term unemployed who are in each of the following industry groups:					
Year	"Low" Unemployment rate	Mn	Con	Mnf	TPU	Trd	Fserv
1969	3.5	0.9	7.0	28.8	5.1	18.8	19.2
1973	4.9	0.5	8.9	25.7	4.7	18.6	20.0
1979	5.8	0.7	7.5	25.7	5.6	16.6	24.2
1988	5.5	2.1	9.6	24.0	5.7	19.0	22.4

Table 4b. Breakdown of long-term unemployment by industry, for selected "high" unemployment rate years over the 1969-88 period, annual averages

		Percentage of the long-term unemployed who are in each of the following industry groups:					
Year	"High" Unemployment rate	Mn	Con	Mnf	TPU	Trd	Fserv
1971	5.9	0.4	6.3	37.9	3.7	17.2	18.5
1975	8.5	0.2	11.5	34.8	4.9	17.2	17.1
1982	9.7	1.5	10.2	32.9	4.8	16.4	19.7

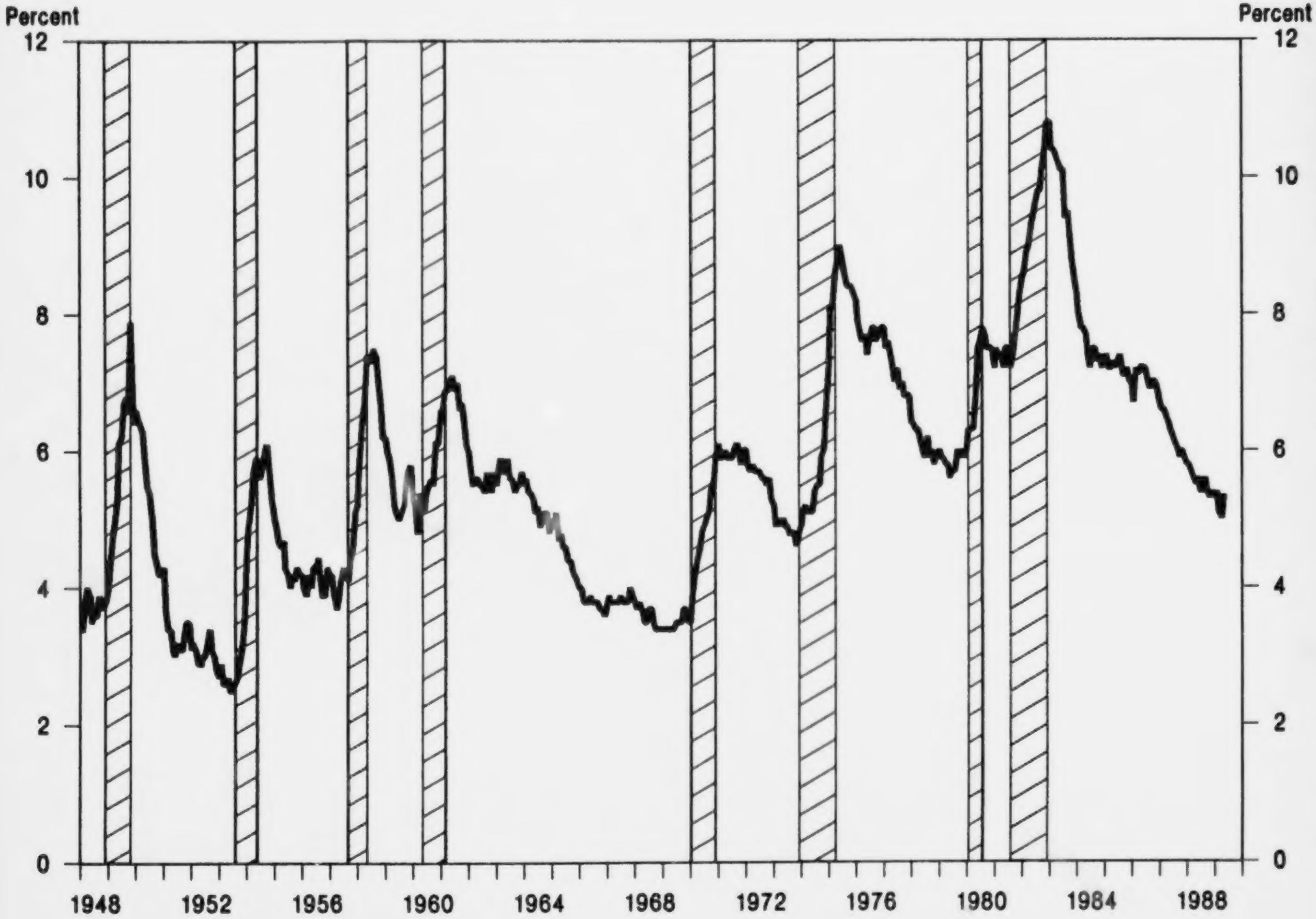
* As of this writing the recovery which began in 1982Q4 is still in progress.

Mn: Mining
Con: Construction
Mnf: Manufacturing
TPU: Transportation and Public Utilities
Trd: Trade
Fserv: Financial Services

Table 5. Comparison between business cycle peak and trough years of the percentage of newly unemployed groups remaining unemployed at least eight months

Peak Year	Percentage	Trough Year	Percentage
1969	2.1%	1971	4.2%
1973	3.0%	1975	7.2%
1979	3.6%	1982	8.0%
1988	2.8%		

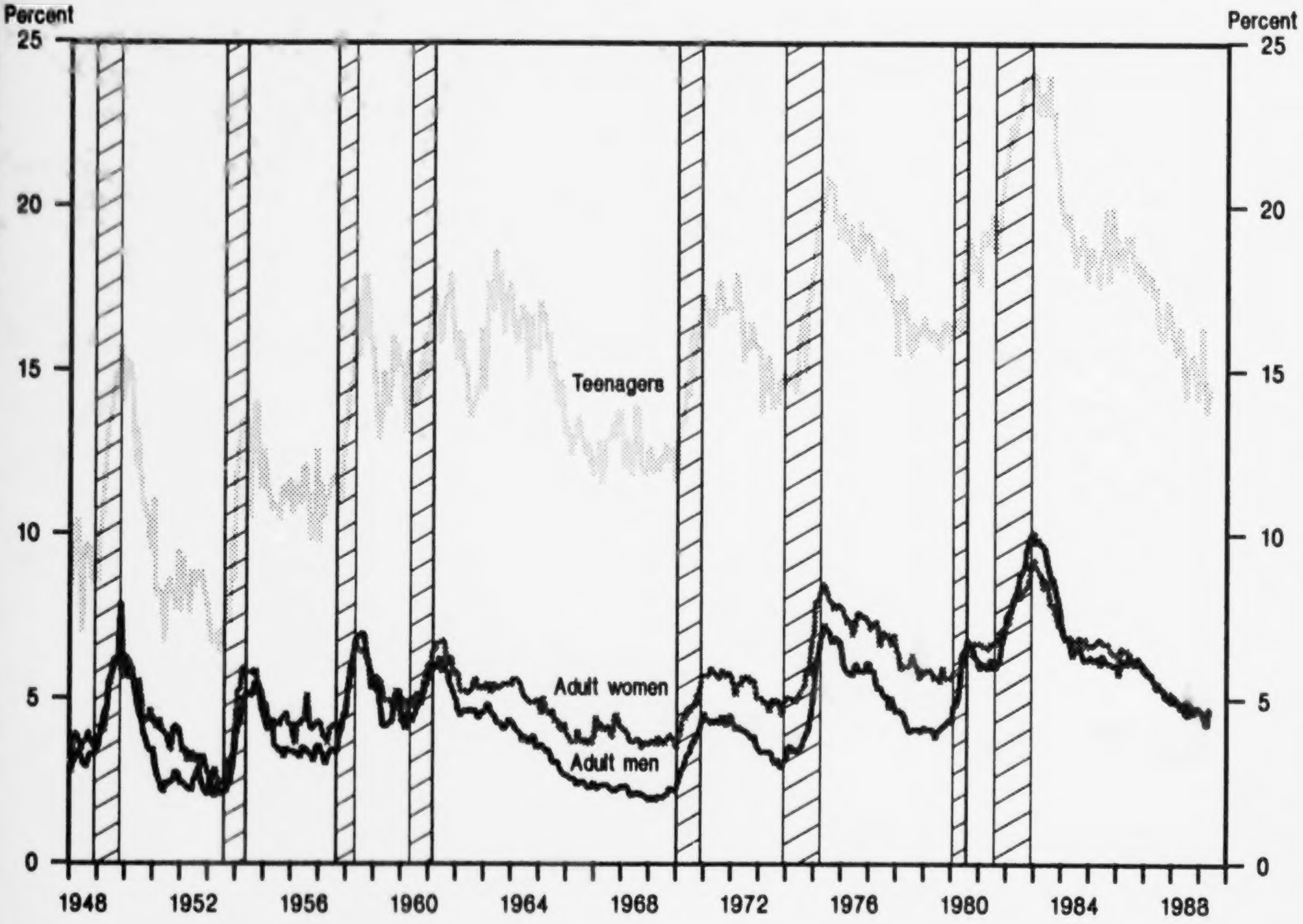
Chart 1. Unemployment rate of all civilian workers, seasonally adjusted, 1948-89



Note: Shaded areas represent recessions

Source: Bureau of Labor Statistics, May 31, 1989

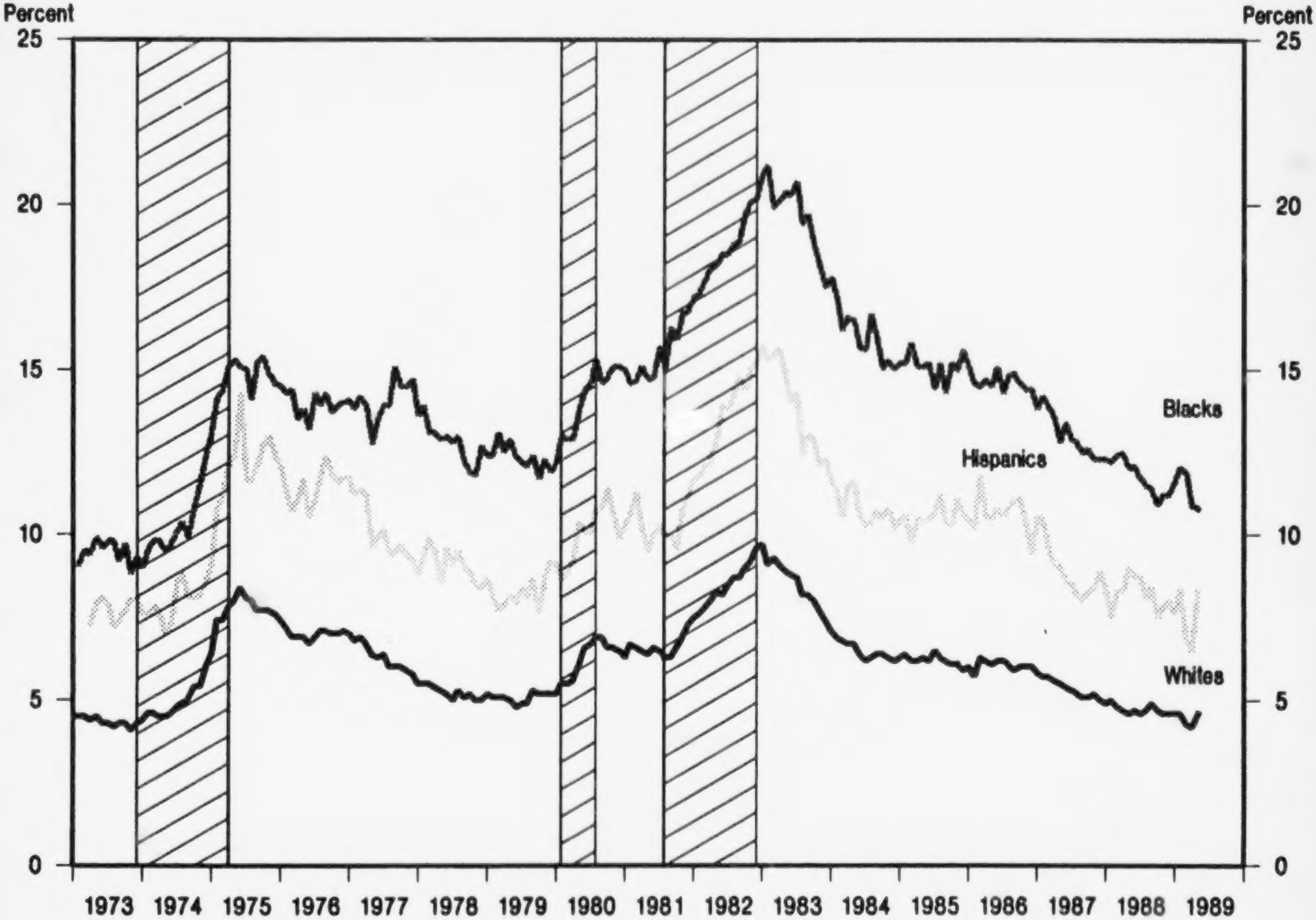
Chart 2. Unemployment rates for major age-sex groups, seasonally adjusted, 1948-89



Note: Shaded areas represent recessions

Source: Bureau of Labor Statistics, May 31, 1989

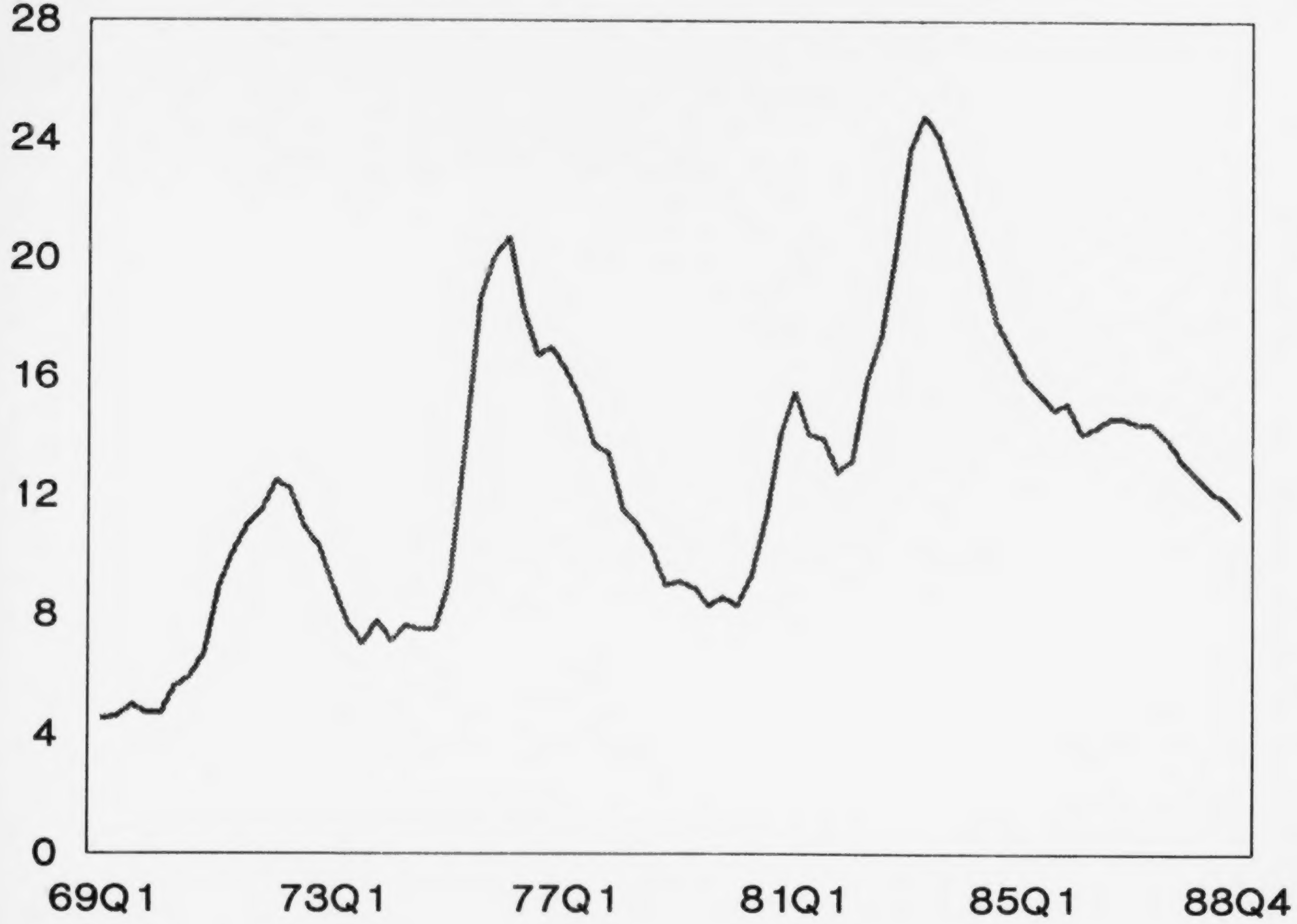
Chart 3. Unemployment rates for whites, blacks, and persons of Hispanic origin, seasonally adjusted, 1973–89



Note: Shaded areas represent recessions

Source: Bureau of Labor Statistics, May 31, 1989

Chart 4. Percentage of total unemployed with 27 weeks or more of unemployment, seasonally adjusted, quarterly averages, 1969Q1–1988Q4.



NOTES

1. This analysis ignores the recovery and recession of 1980-81 because of their extremely short duration.

2. An analysis of the changes in unemployment by region of the country was also conducted. Owing to the fact that the data on regions are not strictly comparable, the results by region are reported in note (3), along with a discussion of the data used in the analysis.

3. A division of the unemployed by region of the country shows that changing unemployment rates within regions, rather than shifting labor force shares between regions, accounts for practically all of the changes in overall unemployment rates during the 1969-88 period.

A potential problem with the data exists, however, owing to the fact that the population weights used in the data are inconsistent across the entire period. Data for 1969 are benchmarked to the 1960 Decennial Census; data for 1971, 1973, 1975, and 1979 are benchmarked to the 1970 Census; and data for 1982 and 1988 are benchmarked to the 1980 Census.

What is the effect of using inconsistent population weights? To gauge the potential bias, the following three statistics were calculated for each of the above mentioned years using the pattern of Census weights described above: the civilian noninstitutional population, civilian labor force, and the civilian unemployment level. A comparison was then made between the value of these statistics with ones derived for the same years using 1980 Census weights throughout.

As expected, the values of the statistics using inconsistent population weights underestimated the values derived using 1980 Census weights. However, a comparison of ratio statistics derived from the levels--namely, the unemployment rate and the labor force participation rate--reduces the bias to zero. This latter finding is supportive of the efficacy of using these data.

4. The formula for the decomposition approach is as follows:

Let Ut = the level of civilian unemployment at time t
Lt = the size of the civilian labor force at time t

For $i = (1,\ldots,N)$, let
$U1t$ = the level of civilian unemployment in group 1 at t
Lit = the size of the civilian labor force in group i at t

For exposition purposes, let $N=2$ (for example, a stratification by sex). In this case, the aggregate unemployment rate equals:

$$Ut/Lt = (L1t/Lt) * (U1t/L1t) + (L2t/Lt) * (U2t/L2t)$$

This expression can be rewritten as:

$$URt = W1t * UR1t + W2t * UR2t$$

where:

URt = the aggregate unemployment rate at time t
Wit = the civilian labor force share of group i at t
URt = the unemployment rate of group i at t

Let the t' subscript be used to denote the value of these variables at time t'. The change in unemployment rates between time t and t' can be expressed as the sum of the following three terms:

$$\begin{aligned}(URt'-URt) = {} & \Sigma\ URit * (Wit' - Wit) \\ + {} & \Sigma\ Wit * (URit' - URit) \\ + {} & \Sigma\ (Wit' - Wit) * (URit' - URit)\end{aligned}$$

The first term measures the change in unemployment rates due to the changing labor force shares across groups, holding the unemployment rate of each group constant at its value in time t. The second term measures the change in unemployment rates due to changing group unemployment rates, holding the civilian labor force of each group constant at its value in time t. The final term is a measure of the covariance of the two effects of changing group labor force shares and changing group unemployment rates. It is often called the error term and is usually small in size. We report the error term in this paper.

5. Finally, a decomposition of the unemployed into age-sex groups was also conducted, although not reported in the tables. The results for this finer group stratification mirror the pattern found using a simple age decomposition.

6. Although not reported in the tables, the analysis by reason for unemployment was repeated for male and female groups. Owing to the fact that such data are not seasonally adjusted, annual average values were used. Comparing "low" unemployment rate years in successive recoveries (1969, 1973, and 1979) as well as the "high" rate ones in successive recessions (1971, 1975, and 1982), job losers of both sexes, reentrant women, and to a lesser extent, new female entrants each posted significant increases in their contribution to secularly rising unemployment rates over the period.

7. Using published groupings of weeks unemployed, the following classifications were adopted: newly unemployed (less than 5 weeks of unemployment); short-term unemployed (5-14 weeks); medium-term unemployed (15-26 weeks); and long-term unemployed (27 weeks or longer).

8. What is not depicted in the chart are the broad trends for the other three groups: over the 1969-88 period, the proportion of the unemployed in new spells declined secularly; the proportion in short-term spells remained flat; and medium-term spells increased their proportionate share slightly.

9. Similar to the conclusions reached in this paper, their work finds that the "secular increase in unemployment in the U.S. is surprisingly evenly distributed across subcategories of the labor force, including industries, regions and demographic groups."

10. For example, consider the following scenario. As inflows into unemployment increase, it is possible for two effects to operate. First, most individuals entering unemployment leave fairly quickly, while at the same time, a small but significant group of people experience much longer spells of unemployment. Under this interpretation, it is possible that the shift toward long-term unemployment has been the result of an increase in the length of time this proportionately small group of people remain unemployed - while most individuals still remain unemployed a short period of time.

11. This calculation is based on unpublished data from the Current Population Survey which provides monthly information on duration by single weeks of unemployment. The size of a newly unemployed group at survey date t was proxied by the number of individuals reporting less than five weeks of unemployment at date t. The size of this group five months later was proxied by the number of individuals reporting anywhere from 17 to 20 weeks of unemployment at survey date t+4. The size of the group at survey date t+7 was proxied by the number of individuals reporting 29-32 weeks at this latter date.

REFERENCES

Abowd, John M., and Orley Ashenfelter, "Anticipated Unemployment, Temporary Layoffs, and Compensating Wage Differentials," in Sherwin Rosen (ed.) Studies in Labor Markets, (Chicago: University of Chicago Press, 1981).

Abraham, K., and Katz, L., "Cyclical Unemployment: Sectoral Shifts or Aggregate Disturbances?" Journal of Political Economy, 94, 1986, pp. 507-522.

Baily, Martin N., (ed.) Workers, Jobs, and Inflation (Brookings, 1982).

Carlson, J.C., and Horrigan, M.W., "Measures of Unemployment Duration as Guides to Research and Policy," American Economic Review, December 1983.

Clark, Kim B. and Lawrence H. Summers, "Labor Market Dynamics and Unemployment: A Reconsideration," Brookings Papers on Economic Activity, (1:1979), pp. 13-60.

Darby, M.W., Haltiwanger, J.C., and Plant, M.W., "The Ins and Outs of Unemployment: The Ins Win," Research Paper Number 8703, National Bureau of Economic Research, 1987.

Davis, S.J., and J. Haltiwanger, "Gross Job Creation, Gross Job Destruction and Employment Reallocation," unpublished paper, 1989.

Dunne, Timothy, Mark Roberts, and Larry Samuelson, "Plant Failure and Employment Growth in the U.S. Manufacturing Sector" unpublished, Pennsylvania State University, 1987.

Dunne, Timothy, Mark Roberts, and Larry Samuelson, "Plant Turnover and Gross Employment Flows in the U.S. Manufacturing Sector," Journal of Labor Economics, 1989.

Hamilton, J., "A Neoclassical Model of Unemployment and the Business Cycle," Journal of Political Economy, 96, 1988.

Horrigan, M.W., "Time Spent Unemployed: A New Look at Data form the CPS," Monthly Labor Review, July 1987.

Leonard, Jonathan S., "On the Size Distribution of Establishments and Employment," NBER Working Paper 1951, 1986.

Leonard, Jonathan S., "Employment Variation and Wage Rigidity: A comparison of Union and Non-Union Plants," unpublished, U.C. Berkeley, 1986.

Leonard, Jonathan S., "In the Wrong Place at the Wrong Time: The Extent of Frictional and Structural Unemployment," in K. Lang and J. Leonard (eds.) Unemployment and the Structure of Labor Markets, (Oxford: Basil Blackwell, 1987).

Leonard, Jonathan S., "Firm and Establishment Growth and Stability," unpublished, U.C. Berkeley, 1988.

Lilien, David M., "Sectoral Shifts and Cyclical Unemployment," Journal of Political Economy, 90, No. 4, (August, 1982): 777-793.

Marston, S.T., "Employment Instability and High Unemployment Rates," Brookings Papers on Economic Activity, 1976, 1.

Medoff, James L., "U.S. Labor Markets: Imbalance, Wage Growth, and Productivity in the 1970s," Brookings Papers on Economic Activity, (1:1983), pp. 87-120.

Oi, Walter, "Labor as a Quasi-Fixed Factor," Journal of Political Economy (70) December 1962, pp. 538-555.

Organization for Economic Cooperation and Development, Employment Outlook, 1988.

Perry, G.L., "Unemployment Flows in the U.S. Labor Market," Brookings Papers on Economic Activity, 1972, 2.

Podgursky, M., "Sources of Secular Increases in the Unemployment Rate, 1968-82," Monthly Labor Review, July 1984.

Sider, H., "Unemployment Duration and Incidence: 1968-1982," American Economic Review, June 1985.

Summers, L.H., "Why is Unemployment Rate so Very High at Full Employment?" Brookings Papers on Economic Activity, 1986, 2.

Topel, R. and Murphy, K., "The Evolution of Unemployment in the United States: 1968-1985." NBER Macroeconomics Annual 1987.

U.S. Bureau of Labor Statistics, "Projections 2000," Monthly Labor Review, (110, No.9) September, 1987.

Warren, R.S., "Technical Note: A Method to Measure Flow and Duration as Unemployment Rate Components." Monthly Labor Review, March 1977.

16. UNEMPLOYMENT INSURANCE: THE WORKER'S PERSPECTIVE

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16. UNEMPLOYMENT INSURANCE: THE WORKER'S PERSPECTIVE

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This paper examines the relationship between Unemployment Insurance (UI) benefits and the duration of unemployment. Our focus is at the level of the individual worker and the effect of UI benefits on the duration of unemployment. We review extant empirical evidence on the question of whether the receipt of UI benefits leads unemployed workers to prolong their spells of unemployment. Our objective is to examine representative studies of UI and worker job search responses with an eye toward eliciting implications for public policy and future research.

A disconcerting feature of empirical analysis of UI data is the wide range of estimated effects of policies and programs that abound in the literature. The disparate results stem from, among other things, differences in data sets, model specifications, time periods, and estimation techniques. One common finding in the studies reviewed below, however, is a positive association between length of spells of unemployment and the receipt of UI benefits. Nevertheless, this still leaves open the question of how to characterize the underlying behavior of unemployed workers. Two competing hypotheses have been suggested in the past: (1) UI benefits constitute a subsidy to leisure; and (2) UI benefits constitute a subsidy to job search. These competing hypotheses have implications for labor market efficiency and public policy.

Underlying the leisure subsidy argument is the basic static model of consumer choice of consumption and leisure (Moffitt and Nicholson, 1982). The income loss from a spell of unemployment overstates the value of the utility loss from reduced earnings. This is because of the value of the utility gain from the (forced) additional consumption of leisure. Hence, unemployment can have some value to workers because of the leisure consumption it makes possible. According to this view, UI benefits increase the attractiveness of unemployment by reducing the opportunity cost of unemployment (leisure). Empirically, one would expect to find a positive association between UI and unemployment duration, and a clustering of unemployment terminations around the week of UI benefit exhaustion. In this framework an increase in the potential maximum of UI benefit duration will have income and substitution effects for those who would have otherwise have exhausted their entitlements. If unemployment is a normal good, the extension of potential duration will unambiguously raise the duration of unemployment.

Job search theory holds that unemployed workers are searching for jobs in a manner that maximizes the present value of expected utility (expected income for a risk neutral worker) from search (Mortensen, 1986). UI benefits serve to reduce the opportunity costs of the search process and can lead unemployed workers to search longer and hold out for better job offers. This model would also imply a positive association between UI benefits and the duration of unemployment as well as some clustering of unemployment terminations around the week of UI benefit exhaustion. Also, an extension of maximum benefit duration would lead to a longer spell of unemployment. Empirically, the job search model is distinguished from the leisure subsidy model by the prediction that UI benefits will produce better job matches including higher post unemployment wages. Our review will examine the available empirical evidence of the effects of UI on unemployment duration in light of these two alternative models.

The remainder of our paper is divided into three parts. Part I is a selective review and summary of what is known about the disincentive effects of UI from non experimental empirical studies. Part II reviews completed and ongoing laboratory and field experiments pertaining to the financial incentives of UI for job search behavior. Part III is a discussion of the research and program policy implications of what has been learned to date about the incentive effects of UI at the level of the individual worker.

Part I: Representative non experimental studies

The Ehrenberg and Oaxaca (E-O) (1976) study represents an early attempt to focus UI research on the effects of UI benefit payments on post unemployment wages as well as on duration of unemployment and time spent out of the labor force. This study used data from the National Longitudinal Survey (NLS) on four gender/age cohorts: males 14-24 and 45-59, and females 14-24 and 30-44 over the period 1966-71. E-O specified their UI variable as a wage replacement fraction, i.e., the ratio of weekly UI benefits to pre-unemployment weekly wages. Here we confine our summary to the E-O results pertaining to workers who completed their spells of unemployment by changing employers.

E-O calculated the effects of raising the wage replacement fraction by 10 percentage points, from 0.4 to 0.5. If one takes a base wage replacement fraction of 0.5, this represents a 20 percent increase in UI weekly benefits. Such an increase was estimated by E-O to raise the duration of unemployment (in weeks) by 0.2, 1.5, 0.5, and 0.3 for males 14-24, males 45-59, females 14-24, and females 30-44. The wage gain effects of this increase in UI benefits were estimated to be 7 percent for males 45-59 and 1.5 percent for females 30-44. Among the 14-24 year olds, the wage replacement ratio had no statistically significant effects on wage gains. Finally, this increase in weekly UI benefits was estimated to reduce time spent out of the labor force by 0.8 weeks for females 14-24 and 0.7 weeks for females 30-44. This effect was not estimated for the older male group and was not statistically significant for young males.

As far as the job search interpretation is concerned, the E-O results are somewhat mixed. The lack of UI induced wage gains for young workers is consistent with any of the following explanations: (a) job search among young people is simply unproductive; (b) young people use their subsidized spells of unemployment to search for jobs with better on-the-job training opportunities at the cost of initially lower post unemployment wages; and (c) UI is serving as a subsidy to leisure for young people. The E-O study does not shed much light on which (if any) of these alternative explanations is correct. They do observe, however, that the apparent substitution of unemployment for time out of the labor force for the young women is consistent with the leisure subsidy argument. In the two cases for older workers in which UI benefits were associated with wage gains, the magnitudes of these effects are implausibly large. The wage gain effects imply that an additional week of search induced by UI is associated with a 5 percent wage gain. One factor underlying these anomalous results could be that the NLS data used by E-O did not permit any control for the effect of UI on search intensity.

Burgess and Kingston (B-K) in their 1976 study estimated the impact of the weekly benefit amount (WBA) on the duration of compensated employment. The data base for the B-K study was the Service to Claimants (STC) experiment over the period 1969-70. The STC experiment was conducted in five cities - Boston, Minneapolis-St. Paul, Phoenix, San Francisco, and Seattle. The sample consisted of UI claimants who were deemed "job ready" (available for work without requiring retraining) but not "job attached" (no job promised within 30 days of the time UI benefits were filed for). The sample was restricted to those claimants who did not exhaust their benefits. Because a change in the UI law in Washington State created ambiguities in calculating WBA, B-K omitted the Seattle data from their study. Also omitted from the sample were those whose post unemployment Social Security wages exceeded the maximum taxable base ($7800 in 1969-70 dollars).

Since the design of the STC experiment was intended to test the effects of special job search assistance to UI claimants and not to test the effects of UI itself on search outcomes, we discuss the B-K results here rather than in Part II. The B-K estimates imply that an additional $10 of WBA raises subsequent annual earnings by $250. A problem here is that the duration of compensated weeks of unemployment was included as a control variable by B-K in their wage gain equations. According to search theory, wage gain and duration of search are jointly determined. Consequently, Welch (1977) applied a rough correction to the B-K estimates and came up with estimates that implied that the total effect of an additional $10 in WBA raises subsequent annual earnings by $180 to $200.

Another study by B-K (1981) concentrated on estimating the effects of WBA on compensated weeks of unemployment after controlling for a worker's maximum duration of benefits. The STC data base was again used. This study found that an additional $10 of WBA raises the duration of compensated unemployment by 0.15 weeks. Combining this effect with the B-K earlier wage gain estimates implies that an additional week of compensated unemployment raises annual earnings between $1200 and $1300. B-K estimated that an additional week of potential benefit duration raises compensated unemployment by 0.61 weeks. Some differences by demographic characteristics were evident from the B-K 1981 study. WBA effects on compensated unemployment tended to decrease with age while the potential duration effects on compensated unemployment tended to increase with age. Both the WBA and potential duration effects tended to be larger among nonwhites.

The Classen study (1977) sought to determine the effects of UI benefits on unemployment duration and earnings by taking advantage of the fact that legislated increases in maximum UI benefits took place in 1968. Classen used the Continuous Wage and Benefit History (CWBH) administrative data on UI recipients in Pennsylvania and Arizona for the period 1967-70. The duration variable was measured as weeks of UI benefits collected per successful claim, the UI variable was the WBA, and the earnings variable was high quarter earnings in the year following a completed spell of unemployment.

Classen found that the WBA had a virtually identical effect on benefit duration in Pennsylvania and Arizona, but it had no statistically significant effect on earnings in either state. Classen's results implied that a $10 (1968 dollars) increase in WBA was associated with an increase in benefit duration of 1.1 weeks. This $10 increase in WBA represented a 10 percentage point rise in the WBA/average weekly wage ratio (a 20 percent rise in the WBA for a worker with a replacement ratio of 0.5). Although Classen's study differs in many respects from the E-O study, the estimated overall effects of UI on duration is quite consistent with the estimates from the E-O study. In addition to the lack of an earnings effect from UI, Classen's study cast further doubt on the productivity enhancing aspects of UI benefits by failing to find any UI effect on the number of employers a worker had in the 2 year period following a spell of unemployment. It was expected that if UI promoted better job matches, workers would have fewer employers following spells of insured unemployment.

In a study by Holen (1977), the effects of UI benefits and the maximum potential weeks of UI eligibility on unemployment duration and subsequent wages were estimated. The data base for the Holen study was the Service to Claimants (STC) experiment. Holen included Seattle in her data base.

Holen specified the duration variable as compensated weeks of unemployment. The earnings variable was specified as earnings per quarter for those with earnings that had not exceeded the maximum FICA taxable limit. Holen's results imply that a $10 (1969-70 dollars) rise in WBA would raise compensated unemployment by about 1 week and quarterly earnings by $90. In other words, each additional week of UI induced search raises quarterly earnings by $90. Holen conjectured that the wage gain effect reflected some combination of an extra week of search and increased search intensity.

An interesting aspect of the Holen study was the estimated effects of extending the maximum potential period of UI claims eligibility on compensated weeks of unemployment and subsequent wages. Extending the maximum potential eligibility period by 1 week was estimated to raise the compensated weeks of unemployment duration by 0.8 weeks and quarterly earnings by $2.50. As Holen had recognized, the positive effect of maximum potential eligibility on compensated duration does not necessarily imply that total unemployment duration would be lengthened. Those who continue to be unemployed after exhausting their benefits would naturally have their compensated spells increased by a legislative extension of the maximum entitlement period. Holen, therefore, investigated whether the extension of potential entitlement had any effect on search behavior. Her results suggested that the probability of short spells of unemployment was indeed reduced by the availability of a longer potential benefit period. Thus, the distribution of total search duration was shifted toward longer spells of unemployment.

That the UI system can have positive effects on labor supply is explored in a study by Hamermesh (1979). This study examines the entitlement effects of UI availability on labor supply and labor force participation among married women. The idea is that market work and labor supply are marginally more attractive to individuals who would otherwise have not worked at all, or would have worked fewer hours in the absence of the potential benefits available through the UI system. Hamermesh drew a sample from the Panel Study of Income Dynamics for the period 1967-71. His sample consisted of married white women between the ages of 30 and 54, who were married to the same husband from 1967 to 1972, and who resided in the same state from 1970 to 1972.

First consider the subsample of women who earned between the minimum and maximum qualifying earnings for UI eligibility. For this group Hamermesh found statistical evidence for the usual negative disincentive effects of UI on desired hours of work from the weekly benefit amount and from the maximum potential duration of benefits. However, he also found a positive effect on desired hours of work from the potential benefits from the UI system of an additional hour of labor supply.

For the entire sample Hamermesh simulated the effects of a 20 percent increase in UI benefits. He estimated that the resulting disincentive effects on total hours of work (among working and nonworking women) was a reduction in labor supply of about 20 hours per year (3.1 percent of the mean hours). Among working women, the disincentive effect was estimated to be a reduction in labor supply of about 15 hours per year (1.2 percent of the mean hours). This was translated into an estimated reduction of 0.48 weeks. Labor force participation was estimated to be reduced by 1.4 percentage points. Interestingly, Hamermesh found that the positive entitlement effects on labor supply and labor force participation virtually cancel out the disincentive effects.

For the entire sample (working and nonworking women), desired hours of work were increased by the entitlement effect in the amount of 17 hours per year (2.6 percent of the mean). In the case of working women, the entitlement effect was estimated to increase desired hours of work by 12 hours (0.9 percent of the mean). This corresponds to an additional 0.38 weeks of work per year. Labor force participation was estimated to increase by 1.1 percentage points. While the net effects are slightly negative, it is hard to escape the conclusion that they are not significantly different from zero.

A study by Solon (1978) questions the desirability of measuring the work disincentive effects of the UI system by looking only at the unemployment effects. If the UI system encourages labor force participation among those who would otherwise be out of the labor force, the estimated UI effects on unemployment would overstate the true disincentive effects as measured by *employment* effects. Consequently, Solon estimates the effect of extended UI benefit eligibility on employment.

The data source used in the Solon study consists of a sample of former UI claimants in the state of New York who had established benefit years over the period September 1972 to August 1973, and who had also exhausted their 26 weeks of regular UI benefit entitlement. These claimants were periodically interviewed up to 6 months after their benefit exhaustions. The post benefit exhaustion period covered the periods March-September 1973 to February-August 1974. During the period of the study (February 18, 1974), the rise in the insured unemployment rate in New York triggered extended benefits of up to an additional 13 weeks for a subset of the sample.

Solon found a marginally statistically significant negative effect of extended UI benefit eligibility on subsequent weeks of employment. His results indicated that for every 10 weeks of extended benefit eligibility, employment was reduced by 1 week. This effect was mainly confined to those who had received UI benefits in 2 of the previous 5 years (repeaters). Solon's estimates of work disincentives were smaller than what one would have inferred on the basis of unemployment effects because of the out-of-the labor force effects.

Fishe and Maddala (F-M) (1980) estimate the effects of UI benefits on the duration of unemployment from a structural model of joint wage offer determination and reservation wage determination. They explicitly incorporate the assumption of finite search horizons among unemployed workers in contrast to the infinite horizon assumption implicitly or explicitly held by most researchers. F-M used a CWBH data set for a sample of workers in Florida who had been unemployed at some point between 1971 and 1975.

The UI benefits variable in the F-M study is defined as the potential weekly benefit amount (PWBA) an unemployed worker is eligible for (equal to WBA for actual periods of compensation). F-M's results imply that a $10 rise in PWBA raises the weekly reservation wage by $4.40 (in 1970 dollars). This corresponds to 2.8 percent of the average weekly wage. Furthermore, the exhaustion of UI benefits was estimated to drop the weekly reservation wage by a statistically significant $26.20 (16.4 percent of the average weekly wage). F-M found that the number of weeks remaining until UI exhaustion was positively related to the reservation wage and was statistically significant. As each week passes without a job acceptance, the weekly reservation wage declines by $2.29 (1.4 percent). This result was interpreted as evidence of a declining reservation wage over the search horizon. F-M treated the finite search horizon as a parameter which they estimated to be 40.9 weeks. Thus, a worker who had not found an acceptable wage offer by the 41st week of unemployment would accept the very next offer to come along. Increasing PWBA by $10 (roughly 20 percent) would raise the duration of unemployment by 1.4 weeks.

The Moffitt and Nicholson (M-N) (1982) study examined the impact of changing the maximum duration of UI benefit eligibility on the duration of unemployment. The labor/leisure choice (leisure subsidy) model provided the theoretical underpinning for the employment (labor supply) function in the M-N study. A maximum likelihood estimation procedure was used to incorporate the kink in the unemployed worker's budget line at the point of maximum UI benefit duration eligibility. Data for the study were drawn from a sample of workers who collected UI benefits under the Federal Supplemental Benefits (FSB) Program.

A negative estimated coefficient on the non-UI, nonwage income variable indicates that weeks of unemployment is indeed a normal good. M-N estimated that increasing potential UI benefit duration by 1 week raises weeks unemployed by 0.1 weeks. This result implies that the 26 week extension of maximum duration of UI benefits triggered by the FSB program in response to the 1974-75 recession increased unemployment duration by about 2.5 weeks. The M-N study also examined the effects of changes in the net wage replacement ratio on unemployment duration. An 10 percent increase in the replacement ratio would raise the duration of unemployment by 0.4 weeks for those with high probabilities of benefit exhaustion and by about 0.8 to 1 week for the typical claimant.

Two major issues pertaining to UI and unemployment were confronted in the Feldstein and Poterba (F-P) (1984) study. The first issue was the existence of evidence that indicated that a significant proportion of unemployed workers hold unrealistically high and socially nonoptimal reservation wages. While one might question whether some of these individuals should be considered unemployed, they are nevertheless counted as unemployed according to the official definition of unemployment. The second issue is that UI benefits exacerbate the problem of nonoptimal reservation wages by raising them further and hence prolonging unemployment.

F-P used data obtained from a special supplement to the May 1976 Current Population Survey (CPS). Unemployed workers were asked to indicate the kind of work they were seeking and the lowest wage they would accept to do the specified work. From this group, F-P selected a subsample of those unemployed who were receiving UI benefits. A reservation wage variable was constructed as the ratio of the reported reservation wage to the last wage received prior to the current spell of unemployment. F-P constructed their UI variable as the ratio of WBA received to the previous wage adjusted for a constant marginal tax rate of 0.3.

Regression analysis revealed that the UI wage replacement variable had a statistically significant positive effect on the reservation wage ratio for each of the groups of UI recipients in the sample ("job losers on layoff", "other job losers", and "job leavers"). Predictably, the UI effect was largest for "other job losers". For a worker in this latter category whose gross UI wage replacement ratio is 0.5 (0.7 after taxes), a 20 percent rise in WBA would increase the reservation wage by 6 percent of the previous wage. F-P also found that the UI net wage replacement ratio had a positive statistically significant effect on the probability that an unemployed worker would have a reservation wage ratio in excess of 1.0. For the same worker as described above, a 20 percent increase in WBA would raise the probability that the reservation wage ratio exceeds 1.0 by 5 percentage points (31 percent of the "other job losers" sample had reservation wage ratios in excess of 1.0). Simulations by F-P indicated that the nonlinearities inherent in the relationship between the reservation wage ratio and the duration of unemployment made the latter more sensitive to UI for those with higher UI wage replacement ratios.

The Moffitt (1985) study is an attempt to deal with the problem of wide ranging estimates of UI effects. Specifically, Moffitt focused on the effects of the maximum potential duration of benefits. His study adopted a uniform specification and estimation strategy across four selected data sets. The objective was to generate a narrower range of UI effects as well as to ascertain how much of the differences in estimates can be attributed to differences in data bases.

The four data sets used were (1) CWBH (1978-83), (2) the Employment Opportunity Pilot Project (EOPP) (1979-81) (also known as the Job Search Assistance Research Project), (3) the Federal Supplemental Benefits (FSB)

Follow-Up Survey (1975-77), and (4) the Newton-Rosen data set (1974-76). The EOPP data base was generated from a demonstration project consisting of 10 treatment sites and 10 comparison sites. This project was concerned with determining the effects of employment and job search assistance to disadvantaged workers. The FSB Follow-Up Survey was a household survey conducted by Mathematica Policy Research Inc. for the purpose of analyzing the effects of an FSB program. The Newton-Rosen data set was drawn from a data base of UI records in Georgia.

Moffitt's study yielded estimated effects of an additional week of potential duration of UI benefits that ranged from 0.17 to 0.45 additional weeks of unemployment for males and 0.10 to 0.37 additional weeks of unemployment for females. There was some hint that these effects were somewhat larger when the unemployment rate was higher. Also, Moffitt found that the effect of an additional week of potential duration on combined weeks of unemployment and out of the labor force was 0.52 weeks for males and 0.66 weeks for females. Moffitt found no strong evidence that increased potential duration had any effect on the labor supply of other members of a UI recipient's family. Finally, Moffitt failed to find any convincing evidence of an effect of potential duration on post unemployment earnings.

The Katz and Meyer (K-M) (1988) study used hazard rate analysis to estimate the impact of potential duration and UI benefit level on the duration of compensated unemployment and on the timing of exits from unemployment. K-M used two data sources for their study: (a) a sample of heads of households from the Panel Study of Income Dynamics (PSID) over the period 1980-81, and (b) a sample of males from the CWBH data

(1978-83) used by Moffitt supplemented by an additional CWBH data set covering the period 1979-1984.

A significant finding from the K-M study was that among UI recipients there were sharp spikes in the escape rates from unemployment at about the duration when UI benefits were about to be exhausted (26 and 39 weeks). No such sharp pattern in escape rates was found for non UI recipients. Although the statistical significances of the potential duration and UI benefit level in the hazard models were marginal, the estimated effects were in the anticipated directions. These results imply that a 1 week increase in potential duration is estimated to raise compensated duration by 0.16 to 0.20 weeks. A 10 percentage point rise in the wage replacement ratio (a 20 percent rise in UI for an individual with a replacement ratio of 0.5) is estimated to increase the length of a compensated spell of unemployment by 1.5 weeks.

Part II: Field and laboratory experiments

Applied econometric studies of the effects of UI, such as those reviewed in Part I, establish statistical associations between UI benefits and unemployment duration, wage gains, and other variables of interest to policy makers. However, interpretations of these results in terms of search intensity, labor/leisure substitutions, etc. require the use of theoretical models as maintained hypotheses. Many econometric studies of UI employ either a finite or an infinite horizon search model as a maintained hypothesis (Devine and Kiefer, 1988). Therefore, if the job search/job acceptance behavior of economic agents is *not* consistent with the search models then the interpretations of the results of the applied research can be misleading. Hence, it is essential that search models be subjected to direct empirical testing to learn whether they can be falsified.

The literature contains some very ingenious studies that use econometric techniques designed to test search models with data from the historical record. Among these are Kiefer and Neumann (1979a, 1979b), Warner et al. (1980), and Lancaster and Chesher (1983). However, the properties of search models pose inherent limitations on what can be learned with this approach. Consider some of the difficulties in attempting to use nonexperimental data to test job search theory. The models imply that the feasibility of recalling past wage offers, the length of the search horizon, and/or agent information about the distribution of wage offers are central determinants of an optimal search strategy. But possibilities of wage offer recall, the length of search horizons, and agent information on wage offer distributions are not observable in nonexperimental data sources. Hence such data are not very useful for learning whether job search models can be falsified by observations of job search behavior. In contrast, controlled experiments have some unique advantages for empirical evaluation of search models. The relative advantages of laboratory experiments and field experiments are somewhat different, and thus we will discuss both types.

Laboratory experiments designed to test finite horizon search models were conducted by Cox and Oaxaca (1989). In these experiments the researchers can control, and thereby observe, the possibility of recalling past wage offers, the length of the search horizon, and agent information about the wage offers distribution. Also under experimental control are theoretically-hypothesized determinants of search behavior such as the discounting rate of interest and the cost or subsidy to search. Thus, such laboratory experiments are well-suited for learning whether people are capable of making choices in a dynamic, uncertain decision environment *as if* they were finding the optimal solutions to stochastic dynamic decision problems. This is the type of behavior that is modeled in job search theory and that is used as a maintained hypothesis in much econometric research on UI.

The Cox and Oaxaca (1989) laboratory experiments were conducted with sixty subjects who participated in base line and various treatment trials. The experimental treatments consisted of variation of the rate of interest, the subsidy to search, the riskiness of the wage offers distribution, the probability of obtaining a job offer, and the length of the search horizon. The picture that emerges from these experiments is one of reasonably close agreement between the predictions of the risk neutral search model and observed subject behavior. Overall, subjects terminated search exactly at the point predicted by the risk neutral model in 77 percent of 600 trials. However, there was significant evidence of risk averse behavior. The risk averse or risk neutral (concave) model survived the experimental tests remarkably well. Fully 94 percent of the search terminations in 600 trials were consistent with this concave search model. The accuracy of the concave search model in predicting search behavior is supported by several parametric and nonparametric tests reported in the paper.

There are six field experiments with the UI program that have either recently been completed or are currently at some stage of planning or implementation. The first of these was the completed Illinois reemployment bonus experiment. Further experiments with alternative bonus formulas are currently in progress in Washington. The completed New Jersey experiments involved several treatments that included combinations of reemployment bonuses, job search assistance, job training, and relocation assistance. The New Jersey experiments were targeted on structurally unemployed workers. Experiments currently in progress in Pennsylvania involve treatments that use alternative reemployment bonus formulas and job search assistance. Two other experiments that are currently in progress are the Washington and the Three State Self-Employment Demonstration Projects. These experiments involve treatments that consist of self-employment allowances and various support services to assist UI recipients who want to become self-employed. The Illinois and New Jersey experiments are the only ones for which results are currently available; hence we will focus our discussion on these two.

Results from the Illinois experiment are presented in Spiegelman and Woodbury (1987) and Woodbury and Spiegelman (1987). In this experiment, individuals in a selected subset of UI claimants were randomly assigned to one of two treatment groups or a control group. An individual who was assigned to the claimant treatment group was eligible for a $500 reemployment bonus if he returned to work with either his old employer or a new employer within eleven weeks of filing the UI claim and remained on that job for at least four months. If an employer hired an individual who was assigned to the employer treatment group then the employer was eligible for a $500 bonus if the worker met the eleven week and four month filing and employment conditions. Bonus-qualifying jobs for both treatment groups had to provide at least thirty hours per week of employment.

The results of the Illinois experiment support the conclusion that reemployment bonuses can significantly affect the job finding behavior of UI recipients. Individuals in the claimant treatment group had an average of 1.37 fewer weeks of unemployment than those in the control group during the first spell and 1.15 fewer weeks during the benefit year. The average differences between the employer treatment and control groups were 0.67 weeks in the first spell and 0.36 weeks during the benefit year. All of these figures except the 0.36 benefit year figure are significantly different from zero at the five percent significance level. Furthermore, the three significant reductions in weeks of unemployment also involve significant reductions in total UI benefits paid out, inclusive of the $500 bonuses. In addition, the lower average number of weeks of unemployment for the treatment groups does not appear to have been achieved at the cost of lower post-unemployment earnings.

Further analysis of data from the Illinois experiment is presented in Meyer (1988). He also discusses some ways in which the results of this field experiment might not be indicative of the effects of a permanent national reemployment bonus program. The Illinois experiment lasted only seventeen weeks and was not publicized; hence it is unlikely that it induced firms to change their layoff and recall policies.

However, if recalled workers were eligible for bonuses in a permanent program, this would provide a substantial subsidy to temporary layoffs. The responses by firms and workers to the incentive provided by this subsidy might lead to a substantial increase in UI claims. In contrast, if recalled workers were not eligible for bonuses (as in the New Jersey and Washington experiments) this would provide an incentive to break up employer/employee matches. Any response to this incentive by workers would increase UI claims and impose other costs on the economy. However, there could be an offsetting effect on firms in that they might reduce layoff frequency in order to avoid having their employees respond to the bonus incentive to join other firms.

Results from the New Jersey experiment are reported in Corson, et al. (1988). In this experiment, individuals in a selected subset of UI claimants were randomly assigned to one of three treatment groups or a control group. The three experimental treatments were: (1) job search assistance; (2) job search assistance combined with training or relocation assistance; and (3) job search assistance combined with a reemployment bonus. The eligibility screens that were used in selecting individuals for inclusion in the experiment were intended to select displaced workers (the target group). This was partially successful although other UI recipients were included. Not surprisingly, the experimental treatments were more effective for individuals not in the target group.

The reemployment bonus formula in the New Jersey experiment was different than the one used in the Illinois experiment that is described above. The New Jersey bonus formula offered individuals one half of their remaining UI entitlement if they started work by the end of the second full week following the assessment/counseling interview. This implies that bonus eligibility began about the seventh week after an eligible claimant filed for UI. The amount that could be claimed during the first week of bonus eligibility averaged $1,644. In subsequent weeks the bonus declined by about 10 percent of the original amount each week.

Data from the New Jersey experiment indicates that each of three experimental treatments significantly reduced both the number of weeks that claimants collected UI and the amount that they collected. Furthermore, the treatment with the reemployment bonus had the largest effect in reducing both weeks of UI duration and dollars of UI paid. The results also indicate that all three treatments increase both employment and earnings in the year following the UI claim. Thus the experimental treatments do not appear to have lowered reservation wages. Finally, various benefit-cost analyses are reported. They indicate that none of the treatments led to positive net benefits for the Labor Department. However, two of the treatments yielded positive net benefits for the government sector and, most importantly, all three of the treatments yielded positive net benefits to society as a whole and to claimants.

Although the results of the Illinois and New Jersey experiments appear to be favorable, Meyer (1988) explains why these results do not support policy conclusions. Both of these experiments were short-lived and were not widely advertised to workers and firms. Hence, it is reasonable to suppose that neither workers nor firms made strategic responses to *the existence* of the experimental treatments. However, the possibility of such strategic responses to a permanent program implies that the results of the experiments might not be a good predictor of the impacts of a permanent program.

Consider the possibility of strategic responses by workers to a permanent reemployment bonus program. The bonus formulas from the New Jersey and Illinois experiments provide good examples to illustrate the problem. The New Jersey bonus became available in the seventh week after a UI claim was filed. The average initial bonus of $1,644 was about five weeks average wages. Thus, anyone who was planning to start a job after two weeks of UI could increase his income by waiting a few more weeks to become eligible for the bonus. In contrast, the Illinois bonus was available immediately after a UI claim was filed. Immediate availability of a bonus would provide an incentive for some people to file UI claims who otherwise might not file. The most obvious example of this would be someone who had a new job lined up upon termination of the previous job. With either type of strategic response, the larger number of benefit payments caused by added claimants might eliminate any cost savings of a bonus program. Therefore, the findings of positive net benefits for reemployment bonuses in the Illinois and New Jersey experiments do not support the prediction that a permanent bonus program of either type would yield positive net benefits.

Another question that was not addressed by the Illinois and New Jersey experiments is the possibility of displacement effects. That is, individuals in the experimental treatment groups who found jobs more quickly may have done so at the expense of others who took longer to find jobs. Any such displacement effects would detract from the calculated net benefits of the experimental treatments. The Pennsylvania experiment will attempt to examine this question by comparing the experiences of the control groups to similar groups in other labor markets. It remains to be seen whether this can be done effectively.

Part III: Implications for research and policy

For all of the many differences in techniques, model specifications, time periods, and data sets that characterize empirical studies of UI effects on individual workers, it is remarkable that these studies all point to the same qualitative effect of UI benefits on work incentives - UI prolongs spells of unemployment and lowers employment among its recipients. Unfortunately, the magnitudes of these estimated effects vary more than one would like. A single best estimate at this point is that a 20 percent rise in WBA for a UI claimant with a wage replacement ratio of 0.5 would increase the duration of his spell of unemployment by about a week. Another source of work disincentives is the maximum potential duration of UI benefits. Given the range of estimates in the literature, a best guess at this point is that an additional week of potential duration increases a spell of unemployment by no more than 0.5 weeks. If one regards weeks of employment as a better measure of work disincentives, then the evidence thus far shows that at least extended benefits beyond the exhaustion of regular UI benefits has very small negative effects on employment.

The empirical evidence on the wage gain aspects of UI is not even in agreement on the existence of such an effect let alone on its magnitude. This goes to the heart of the issue of whether the job search or the leisure subsidy hypothesis is the most appropriate for understanding the effects of UI on spells of unemployment. While some studies show a wage gain, others do not. At the present time one can find no compelling evidence in support of the proposition that UI increases wages because of better job matches and increased job stability. This does not necessarily mean that there are no such effects, but only that significant data problems prevent the research community from being able to properly test for their presence.

It should be appreciated that different estimated UI effects that merely reflect demographic differences are not necessarily a statistical problem. Different worker responses to UI can be anticipated when workers differ in their personal characteristics. This does, however, present a policy problem because of the political and legal difficulties in adopting UI legislation that treats potential UI recipients differently depending on their non job related personal characteristics.

What are the implications of previous research for the future UI research agenda? These implications fall into two categories: (a) appropriate data bases, and (b) research topics. Virtually all of the empirical evidence on UI to date is derived from non experimental sources. These include administrative records and household surveys. Few of the authors of these studies have been too inhibited to point out severe limitations of the data bases used by others (and sometimes even their own!). It seems clear that there is a consensus that using data based on only compensated spells of unemployment introduces unacceptable estimation biases when analyzing *total* duration of unemployment spells. But even with household survey data that yield information on completed spells of unemployment, there are too many important factors that go unobserved. These include the length of a worker's search horizon, the worker's discounting rate of interest, a worker's search costs, etc.

An essential concept of the search paradigm that provides the theoretical basis for most of the UI studies on individual worker behavior is the reservation wage. Yet this theoretical construct is not observed in the data. What about the question in the May 1976 CPS that asked unemployed workers to state the lowest wage they would accept for the kind of job they were seeking? We maintain that there is no basis for interpreting the answers to this question as corresponding to the theoretical notion of a reservation wage. In their actual job acceptance decisions, workers are in no sense bound by their answers to the reservation wage question. One might more plausibly argue that the answer to this question reflects a hoped for or desired wage. Consistent with this view is the evidence found in Feldstein and Poterba (1984) that shows little or no decay in the ratio of stated reservation wages to the previous wage with the number of weeks the individual had been unemployed. Accordingly, we are not prepared to draw any policy conclusions from the magnitude of the estimated UI effect on the reported reservation wage in the F-P study. This is an important issue because in the search paradigm it is the effect of UI on the reservation wage that produces the association between UI and the duration of unemployment. The absence of data on this variable could potentially be managed if one could observe all offers received by an unemployed worker instead of only the accepted offer. Unfortunately, traditional data sources do not provide information on all offers received.

One of the significant advantages of controlled experiments is that they can make some variables observable that would otherwise be unobservable. This is especially true of laboratory experiments in which such factors as the feasibility of recalling past wage offers, the length of the search horizon, and agent information about the distribution of wage offers are controllable and therefore observable. These theoretical determinants of job search behavior are inherently unobservable in non experimental data sources and difficult or impossible to observe in field experimental data sources. Although fewer variables are observable in field experiments than in laboratory experiments, the former have the obvious advantage of being conducted in an environment that is closer to the naturally-occurring economy in which UI programs actually operate.

The UI research agenda of the future should include the topics described below.

The effects of UI on post unemployment earnings and on the quality of post unemployment job matches is still very much an open question. The answer to this question bears on how much we regard UI in its traditional role as income maintenance for workers on temporary lay off as opposed to its potential role for improving the efficiency of job search.

More research is needed to determine what effects UI has on search intensity. Changes in the UI system to provide monetary incentives to shorten the duration of UI claims may possibly work through some combination of lowering the reservation wage and increasing job search intensity. The fear some may have about the former is that poorer job matches may be encouraged.

If UI is found to raise post unemployment earnings through better job matches, then a cost-benefit analysis should be performed to determine whether the social gains offset the social costs of longer job searches.

The incentive effects of UI over the business cycle need to be examined more systematically. It seems reasonable to suppose that an additional dollar of UI benefits or an additional week of maximum potential duration will have different effects on search decisions depending upon where the economy is in the business cycle.

Moffitt (1985) makes a convincing case for the need to better model the dynamics of the search process of unemployed workers as time varying variables such as potential duration, the unemployment rate, etc. change during the search process. Changes in these factors can influence the efficacy of UI policy. This topic is related to the immediately preceding one.

More research is needed on the formal modeling and empirical testing of simultaneous search by firms for workers and search by workers for jobs. How does the UI system simultaneously affect both sides of the labor market?

Without awaiting the definitive work on the effects of UI on work incentives, there are some policy implications that can be raised at this point.

If the UI system were found to produce better job matches, then why should there be a public subsidy to productive job search? A divergence between private and social gains could be one justification. The existence of imperfect capital markets might be a justification for a public subsidy. As argued in Classen (1977), such a justification need not require outright UI grants. Rather, one could make an argument that a subsidized unemployment loan program could address the problem of imperfect capital markets.

Policymakers are continually faced with the task of limiting the benefit costs of the UI program. To the extent that the costs of the UI program are ultimately borne by employers and by workers in the covered sector, both parties have an interest in cost effective UI plans. Aggregate benefit costs could be lowered by legislating reduced weekly benefit amounts and/or maximum weeks of UI entitlement. However, such measures would degrade the adequacy of UI benefits as an effective form of income maintenance during temporary spells of unemployment. Another cost-saving measure would be to tighten up on eligibility requirements in the nonmonetary determinations. This already occurs to some extent because claims deputies can give closer scrutiny to UI claims without the need for formal legislative changes.

The desire to reduce both the transfer payments of UI and its administrative costs can be accommodated by making the program function more like insurance rather than as income maintenance. The reemployment bonus payment plan is a step in this direction. There are of course the usual moral hazard problems to be concerned with. Furthermore, the results from completed UI bonus field experiments have not provided adequate evidence to support the conclusion that a permanent reemployment bonus program would be cost effective.

Given the likelihood that the effects of the UI system are not invariant over the business cycle, it is unfortunate that the current UI system offers little flexibility in dealing with this issue. About the only automatic response is the Extended Benefits (EB) program which is triggered by a state's insured unemployment rate reaching 6 percent for states with such provisions or a 5 percent rate that is at least 20 percent higher than the average for the corresponding period in the previous two years. One could imagine different UI payment schedules being triggered by a high unemployment rate. For example, consider a UI bonus plan in which a job acceptance bonus declines the longer a UI claimant goes without accepting a job. One possibility is that the UI bonus payment decreases at an increasing rate. This plan would provide the strongest incentives to accept an offer early in the spell of unemployment. This would make sense in periods of relatively low unemployment when the probabilities of receiving job offers are high. In periods of high unemployment the incentive for early job acceptance would be frustrated by the low probabilities of receiving job offers. During these periods it might make more sense to implement a UI bonus payment schedule that provided more incentive farther along in a worker's spell of unemployment. Such a plan would offer a UI bonus schedule that declined at a decreasing rate during a spell of insured unemployment.

We believe that such plans as we have discussed above are feasible and could meet the objective of adequate income maintenance assistance for the involuntarily unemployed without unacceptable work disincentives. They would be good candidates for inclusion in future field experiments.

Other future field experiments should be designed so as to not be subject to the major shortcoming of the present experiments that we discussed in detail in Part II. This shortcoming is that the results of the completed and in-progress experiments with reemployment bonuses, etc. may not be good predictors of the effects of a permanent policy because of differences in feasibility of strategic responses by workers and firms. There is no low cost solution to this experimental design problem. In order to incorporate in an experiment the same possibility for strategic responses that would exist with a permanent program the experiment must continue for a longer time period than has previously been tried with UI experiments. Of course the incentive features of the experimental treatments would also need to be widely advertised.

As important as the association between the UI benefit award structure and the duration of unemployment is politically and economically, there are other aspects of the UI system that can be examined from the worker's perspective. These include the issue of eligible non-filers and the issue of recidivism in the collection of UI benefits over the life cycle. A comprehensive treatment of these and related issues merits a separate review.

REFERENCES

Burgess, Paul L. and Jerry L. Kingston. "The Impact of Unemployment Insurance Benefits on Reemployment Success," *Industrial and Labor Relations Review* 30(October 1976): 25-31.

Burgess, Paul L. and Jerry L. Kingson. "UI Benefit Effects on Compensated Unemployment." *Industrial Relations* 20(Fall 1981): 258-270.

Classen, Kathleen P. "The Effect of Unemployment Insurance on the Duration of Unemployment and Subsequent Earnings." *Industrial and Labor Relations Review* 30(July 1977): 438-444.

Corson, Walter, et al. "The New Jersey Unemployment Insurance Reemployment Demonstration Project: Impact and Benefit-Cost Report." Draft version prepared by Mathematica Policy Research, Inc. November 1988.

Cox, James C. and Ronald L. Oaxaca. "Laboratory Experiments with a Finite Horizon Job Search Model." *Journal of Risk and Uncertainty* (1989), forthcoming.

Devine, Theresa J. and Nicholas M. Kiefer. "Empirical Labor Economics in the Search Framework." Unpublished paper (January 1988).

Ehrenberg, Ronald G. and Ronald L. Oaxaca. "Unemployment Insurance, Duration of Unemployment, and Subsequent Wage Gain." *American Economic Review* 66(December 1976): 754-766.

Feldstein, Martin and James Poterba. "Unemployment Insurance and Reservation Wages." *Journal of Public Economics* 23(February/March 1984): 141-167.

Fishe, Raymond P.H. and G.S. Maddala. *Effect of Unemployment Insurance on Duration of Unemployment: A Study Based on CWBH Data for Florida*. Unemployment Insurance Occasional Paper 80-3. Washington D.C.: U.S. Department of Labor, Employment and Training Administration, Unemployment Insurance Service. 1980.

Hamermesh, Daniel S. "Entitlement Effects, Unemployment Insurance and Employment Decisions." *Economic Inquiry* 17(July 1979): 317-332.

Holen, Arlene. "Effects of Unemployment Insurance Entitlement on Duration and Job Search Outcome." *Industrial and Labor Relations Review* 30(July 1977): 445-450.

Katz, Lawrence F. and Bruce D. Meyer. "The Impact of the Potential Duration of Unemployment Benefits on the Duration of Unemployment." Working Paper #241, Industrial Relations Section, Princeton University. Revised May 1988.

Kiefer, Nicholas M. and George R. Neumann. "An Empirical Job Search Model, with a Test of the Constant Reservation-Wage Hypothesis." *Journal of Political Economy* 87 (February 1979a): 89-107.

Kiefer, Nicholas M. and George R. Neumann. "Estimation of Wage Offer Distributions and Reservation Wages." In Steven A. Lippman and John J. McCall (eds.), *Studies in the Economics of Search*. Amsterdam: North-Holland, 1979b.

Lancaster, Tony and Andrew Chesher. "An Econometric Analysis of Reservation Wages." *Econometrica* 51 (November 1983): 1661-1676.

Meyer, Bruce D. "Implications of the Illinois Reemployment Bonus Experiments for Theories of Unemployment and Policy Design." Working Paper #242, Industrial Relations Section, Princeton University. November 1988.

Moffitt, Robert. *The Effect of the Duration of Unemployment Benefits on Work Incentives: An Analysis of Four Data Sets.* Unemployment Insurance Occasional Paper 84-4. Washington D.C.: U.S. Department of Labor, Employment and Training Administration, Unemployment Insurance Service. 1985.

Moffitt, Robert and Walter Nicholson. "The Effect of Unemployment Insurance on Unemployment: The Case of Federal Supplemental Benefits." *Review of Economics and Statistics* 64 (February 1982): 1-11.

Mortensen, Dale T. "Job Search and Labor Market Analysis." In Orley Ashenfelter and Richard Layard (eds.), *Handbook of Labor Economics*. New York: North-Holland, 1986.

Solon, Gary. *Work Disincentives in Unemployment Insurance: A Brief Review of the Issue and Literature.* Unemployment Insurance Technical Staff Paper 3. Washington D.C.: U.S. Department of Labor, Employment and Training Administration, Unemployment Insurance Service. 1978.

Spiegelman, Robert G. and Stephen A. Woodbury. "The Illinois Unemployment Insurance Incentive Experiments." Final Report to the Illinois Department of Employment Security. Kalamazoo: W.E. Upjohn Institute. February, 1987.

17. UNEMPLOYMENT INSURANCE FINANCING, SHORT-TIME COMPENSATION, AND LABOR DEMAND

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The fifty-four year-old U.S. unemployment insurance (UI) program is a set of 53 separate programs loosely linked by Federal requirements imposed through the tax structure that finances benefits and their administration. Unlike UI programs in nearly all other industrialized countries, benefits in the U.S. are almost entirely financed by taxes on employers, and those taxes are partly experience rated --- taxes paid increase as benefits received by the employer's workers increase (see Edebalk-Wadensjö, 1986, and Chinloy, 1980). Since the mid-1970s knowledge of the likely impacts of those taxes on labor markets has burgeoned. It is thus especially timely to consider the effects of recent subtle, but sometimes major changes in the structure of UI taxes. This study presents a capsule summary of how UI is financed; demonstrates how UI financing can affect the structure of employment, employment fluctuations and the demand for workers and hours; and discusses various policy proposals.

I. The Unemployment Insurance Tax System

The general outline of UI financing in the United States is simple. Almost all UI benefits are financed by taxes on employers. Employers pay a small amount to the federal government to cover administrative and other costs. Employers' state UI tax liabilities can increase as more benefits have been paid to their laid-off workers and more benefits have been paid statewide compared to the state UI system's tax revenues.

An employer's state UI account can be thought of as a bathtub, with benefits running out of the tub and taxes pouring in. The rate of flow into the tub depends on how fast the water (benefit payments) flows out of the tub and on the water (tax) pressure statewide, which is higher when all tubs are low on water (funds). In some employers' tubs the benefits flow out so fast, and the spigot of taxes they must pay is relatively narrow, that the tub is always empty. At the opposite extreme, some other companies find that benefits flow out so slowly that the spigot of their taxes allows a sufficient inflow of taxes to keep the tub always full.

The details of financing are as follows. Under the Federal Unemployment Tax Act (FUTA) employers are liable to a tax of 6.2 percent on the wages of each employee, up to a ceiling (tax base) of $7000 per worker. Wages above this amount are not subject to federal tax. So long as the state UI tax system that finances benefits is constructed so that it is possible for an employer to pay at least a 5.4 percent tax rate, 5.4 percentage points of the FUTA tax is credited to that state's employers. The remaining 0.8 percentage points of the tax are retained by the federal government for use as grants to states for program administration, payment of long-term benefits, and loans to state UI systems.

Total FUTA tax collections (the 0.8 percentage points) in 1987 were $6.1 billion; but total state UI taxes in that year were $19.1 billion. While the FUTA tax is small, its impact on total UI taxes need most favorable schedule (the lowest range of tax rates facing each employer) and on the least favorable schedule (the highest range of tax rates). The tremendous diversity in the states' tax structures is made clear by these data and those in Appendix Table 1. Interstate differences in the structure of tax rates can cause the effectiveness of experience rating to differ sharply among states.

Even more noticeable in Table 1 are the sharp increases in each state in the range of rates between 1978 and 1988. The reason for the changes is clear: The Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) raised the creditable part of the FUTA tax rate from 2.7 percent to its current 5.4 percent effective in 1985. This federally-imposed change meant that the potential for more complete experience rating has been much greater since 1985. Indeed, 8 states now have t_{max} above 7 percent on their most favorable (lowest) schedules, and 16 have this on their least favorable (highest) schedules. Moreover, many states have chosen to lower t_{min}; 12 states now have a t_{min} of zero on their most favorable schedule.

Along with the major changes in tax-rate policy in the 1980s have come important though less obvious changes in policy regarding the tax base. The tax base under FUTA was raised from $4200 to $6000 in 1978, and to $7000 in 1983. As Table 2 and Appendix Table 2 show, an increasing number of states set the tax base above the federal minimum. State UI taxes are now applied to a tax base that exceeds $7000 in 37 of the 51 major jurisdictions (states and the District of Columbia). This has not prevented increases in taxable wages from driving the ratio of the base to the average annual wage (AAW) to the lowest it has been

TABLE 1

State UI Tax Schedules, 1978 and 1988

	YEAR							
	1978				1988			
	Most Favorable		Least Favorable		Most Favorable		Least Favorable	
STATE	T_{min}	T_{max}	T_{min}	T_{max}	T_{min}	T_{max}	T_{min}	T_{max}
California	0.00	3.30	0.40	3.90	0.30	5.40	1.30	5.40
Illinois	0.10	4.00	0.10	4.00	0.20	6.70	0.20	6.70
Indiana	0.02	2.80	2.70	3.30	0.02	5.40	1.30	5.40
Massachusetts	0.40	4.20	2.20	6.00	1.20	5.40	3.00	7.20
Michigan	0.30	6.90	0.30	6.90	0.00	8.00	1.00	10.00
New Jersey	0.40	4.30	1.20	6.20	0.30	5.40	1.20	7.00
New York	0.30	3.00	4.30	5.20	0.00	5.40	2.10	6.40
North Carolina	0.10	5.70	0.10	5.70	0.01	5.70	0.01	5.70
Ohio	0.00	3.60	0.60	4.30	0.00	5.20	0.30	7.30
Texas	0.10	4.00	0.10	4.80	0.00	6.00	0.00	6.00

SOURCE: Comparison of State UI Laws, August 1978, September 1988.

not be. The reason is that the FUTA tax is the main lever used in federal legislation to influence state UI tax policy.

To qualify for the 5.4 percentage-point credit on the FUTA tax, all states have adopted systems of at least partial experience rating. Over half of all employees are in states where experience rating is based on the reserve ratio, the excess of the employer's prior taxes minus prior benefits relative to the company's taxable wages (Topel, 1985). One-fourth are in states where experience rating is based on recent, usually three-year averages of the benefit ratio, benefits paid relative to taxable wages. These ratios essentially measure how well funded the employer's UI account is.

In the reserve-ratio system the typical tax structure can be described by Schedule A in Figure 1 (based on Brechling, 1981). (In a benefit-ratio state the benefit ratio would be on the horizontal axis.) The tax rate cannot drop below a legislated minimum t_{min}, which is often zero in some states, even if reserves rise above some maximum reserve ratio, R^*. As the company's reserve-ratio drops, its tax rate rises in steps until it hits t_{max}, the highest tax rate on employers with positive reserves (positive balances). In some states an extra tax on negative-balance employers --- those whose reserve accounts are in deficit --- makes the highest tax rate t_{neg}.

Schedule A in Figure 1 is not permanent. An employer's tax rate also depends on the experience of the entire state UI fund. If the state fund is low --- it has been paying out more than it has recently taken in --- a higher tax schedule is imposed statewide. There is some least favorable schedule, Schedule B in Figure 1, that relates a firm's

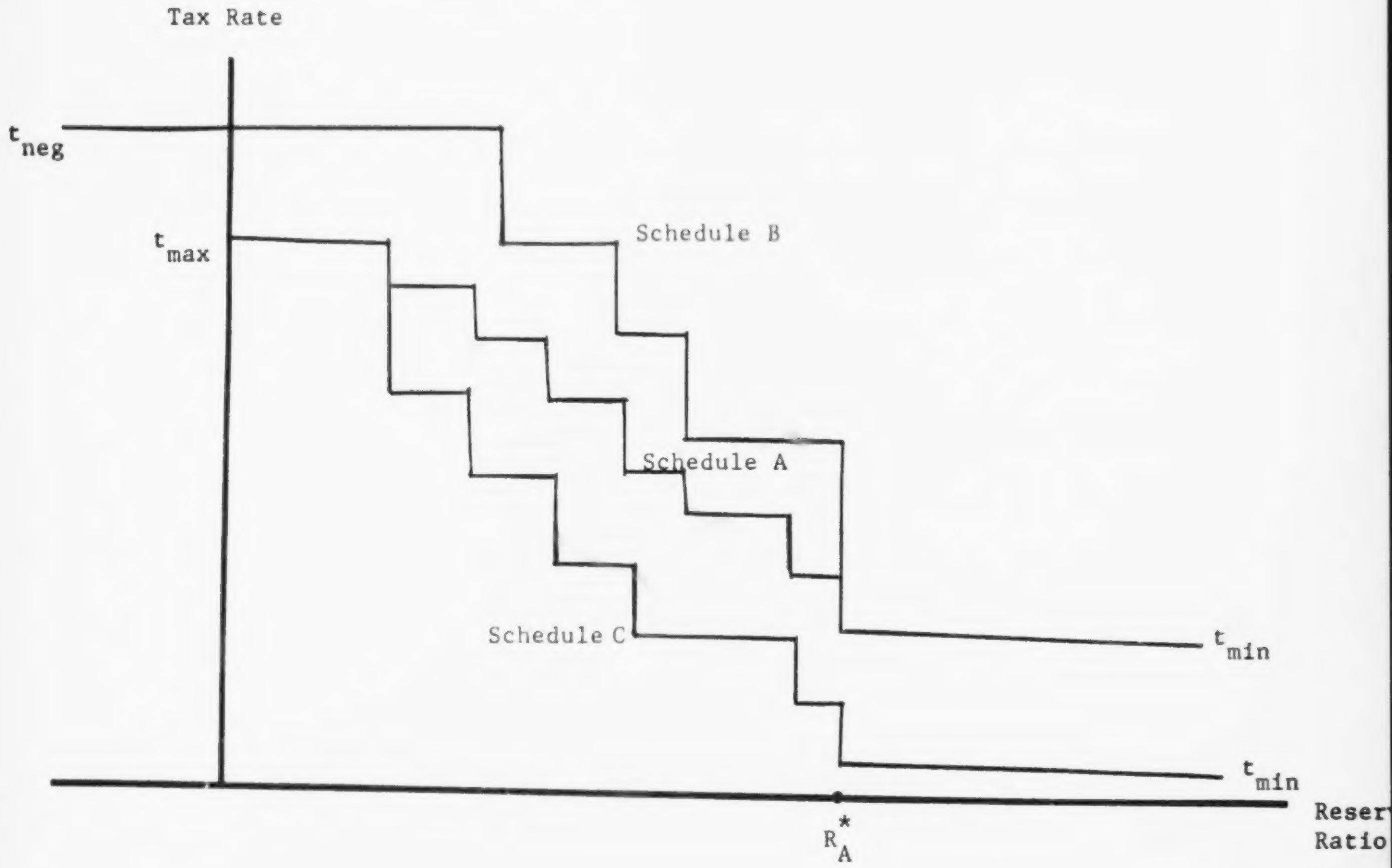
Tax Rate
t_{neg}
t_{max}
Schedule B
Schedule A
Schedule C
t_{min}
t_{min}
R_A^*
Reser
Ratio

Figure 1. UI Tax Schedules, Tax Rates and the Company's Reserve Ratio

NOTE: t_{neg} = Tax rate on negative-balance employers.

t_{max} = Maximum tax rate on positive-balance employers

t_{min} = Minimum tax rate

Warner, John T., Carl Poindexter, Jr., and Robert M. Fearn. "Employer-Employee Interaction and the Duration of Unemployment." *Quarterly Journal of Economics* 94 (March 1980): 211-233.

Welch, Finis. "What Have We Learned from Empirical Studies of Unemployment Insurance?" *Industrial and Labor Relations Review* 30(July 1977): 451-461.

Woodbury, Stephen A. and Robert G. Spiegelman. "Bonuses to Workers and Employers to Reduce Unemployment: Randomized Trials in Illinois." *American Economic Review* 77 (September 1987): 513-530.

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tax rate to its reserve ratio when the state fund is weakest. Obversely, if the state fund has been bringing in more taxes than have been paid out in benefits, lower schedules are imposed. There is some most favorable schedule, Schedule C, that employers face if the state fund is very flush. Notice that t_{min}, t_{max} and t_{neg} can differ along the various schedules (though few states have both different minimum and maximum tax rates on their most and least favorable schedules).

A company whose reserve ratio is above R^* when the state is on Schedule A cannot reduce its tax rate below the t_{min} now paid; and if the state were already on its most favorable schedule, the tax rate could never be reduced. Unless $t_{min} = 0$, these bounds on taxes mean that additional benefit payments will not raise the employer's tax bill; and lower benefit payments may not lower the tax bill. Additional benefits paid by an employer with a negative balance cannot raise the tax on a given schedule; and if the state is already on its least favorable schedule, those benefits cannot raise taxes in the future if the employer continues to pay very high UI benefits. Also, negative-balance employers do not accrue any interest charges; and positive-balance employers are not credited with interest. The absence of interest charges means that other employers essentially provide interest-free loans out of their tax payments to finance benefits for employees of negative-balance firms.

State governments have made decisions that some noncharged benefits --- those paid to voluntary quitters and selected other categories of recipients --- will not be financed by taxes on the employer from whose company the worker was separated. The limits on tax rates, the absence of interest credits to employers with positive balances and interest charges on those with negative balances, and the noncharging of some benefits mean that for some UI benefit payments the experience rating of taxes is ineffective. All of these considerations imply that experience rating is incomplete --- a firm's annual tax liability does not fully reflect the actuarial present value of the benefits paid to its employees. The UI tax is only partly experience rated.

Over a period of time taxes statewide must equal total payments of regular benefits; state UI systems must be self-financing. This consideration and the existence of noncharged and ineffectively charged benefits mean that the typical employer's UI tax liability is partly fixed per worker, partly increasing with past benefit payments. The typical employer's UI tax bill is:

$$eB + T ,$$

where B is total benefits paid to the firm's workers, T is a fixed amount that is large enough to keep the state fund in balance over a period of years, and e measures the effectiveness of experience rating --- how many cents each extra dollar of benefits costs the typical employer (Feldstein, 1976). The measure e is crucial in analyzing many of the effects of UI on labor markets. If e were one, experience rating would be complete; if it were zero, the UI tax would be independent of the firm's experience.

Table 1 presents information on the tax-rate structures of the ten largest states for which comparable data are available for 1978 and 1988.[1] For each of the two years the table presents t_{max} and t_{min} on the

TABLE 2

The UI Tax Base, 1978 and 1988

STATE	Base 1978	Base AAW 1978	Base 1988	Base AAW 1988
California	$6,000	.475	$7,000	.312
Florida	6,000	.579	7,000	.393
Illinois	6,000	.445	9,000	.403
Massachusetts	6,000	.515	7,000	.331
Michigan	6,000	.399	9,500	.394
New Jersey	6,200	.476	12,000	.525
New York	6,000	.445	7,000	.292
Ohio	6,000	.451	8,000	.377
Pennsylvania	6,000	.493	8,000	.401
Texas	6,000	.500	8,000	.377
ALL STATES	6,190	.513	8,535	.417

NOTE: AAW = Average annual wage.

since the program's inception.[2] Federal policy has consciously widened the range of experience-rated tax rates; it has unconsciously reduced the fraction of wages to which those rates apply.

II. Effects of UI Taxes on the Labor Market

The labor-market impact of UI taxes stems from two sources: 1) The incompleteness of experience rating --- that is, $\underline{e} < 1$; and 2) The limit on the tax base to an amount far less than the wage earned by most workers. The effects are felt in three broad areas: 1) The kinds and sizes of different industries; 2) The extent of employment fluctuations in an industry; and 3) The types of workers, their wages and the length of their workweeks.

A. Effects on Employment Structure

The incompleteness of experience rating causes taxes to exceed benefit payments in some firms and fall short in others. These differences are not random. In 1978, for example, agriculture-forestry-fisheries generated far more benefit payments than taxes in the 11 states examined by Becker (1981, Table 8). Construction generated more benefits than taxes in 10 of the 11 states, and mining did so in 9 of the 11. Incomplete experience rating produced the opposite result in several other major industries. In all 11 states typical employers in finance-insurance-real estate paid taxes that exceeded the benefits received by their workers. This was true in 10 of the 11 states in the transportation-communications-utilities industries, and in 9 of 11 in services and wholesale-retail trade. These systematic differences exist both within particular states and in the entire nation (see Munts-Asher, above-average unemployment, this means that the UI system subsidizes the expansion of high-unemployment industries through a net tax on more stable industries. By causing an expansion of the demand for goods whose production creates more unemployment, incomplete experience rating makes the economy more prone to unemployment. Total employment economy-wide does not expand, though; the increase in the subsidized industries is offset by a drop in employment in industries that pay more in taxes than their workers receive in benefits.

Research on UI has pointed out the steady and continuing flow of subsidies toward certain industries, but has spent little time analyzing the size of their effects. There is substantial agreement that the cross-subsidies do not affect profits, given the fairly competitive nature of American industry (McLure, 1977). Most of the impact is either on wages, and hence indirectly on product prices, or on prices directly. In either case the effect is to change the sizes of industries as customers switch to subsidized goods.

The few studies of this effect yield vastly different implications. The one study (Deere, 1988) that examines the impact of the subsidy on the relative sizes of industries across states finds that, in states where the subsidy is bigger, the least stable industries are relatively larger. The implied effects are, indeed, huge. The only examination of the costs of the encouragement to excess production in the subsidized industries suggests that in construction, an industry that is heavily subsidized by the UI system, an amount equivalent to 0.25 percent of output is wasted (Topel, 1986). The directions of the likely impacts of the subsidy are clear, and we know that the result is

1980). They were present in data covering a variety of states in the 1960s. Data for New Jersey in the mid-1970s show that a company paying t_{max} in one year is very likely to be paying that highest tax in succeeding years: The same employers consistently take more from the UI system than they put in (Marks, 1984). All these phenomena probably still exist, though the widening of tax rates in the mid-1980s almost certainly reduced the extent of the differences among industries. They represent a cross-subsidy from those industries that pay taxes that exceed benefits to those where benefits paid fall short of taxes.

This subsidy lowers the cost of doing business in the subsidized industry. Because of it, employers could hire workers on more favorable terms, as workers are attracted to an industry that can offer them UI benefits financed by other employers; they could sell their products more cheaply, and/or they could make higher profits. Unless the entire impact comes in the form of higher profits, the subsidy raises output and employment in the subsidized industries above they would otherwise be, and reduces them in the industries that are paying the subsidy.

Consider the typical firm in a subsidized industry. Its demand for labor is shown by the downward-sloping demand curve D_0 in Figure 2. If the entire effect of the subsidy is on wages, so that the wage falls from W_0 to W_1, Figure 2 shows that employment in good times in the subsidized industry would expand from N_0 to N'_0, as employers move down their demand curve D_0. (If the effect were instead wholly on product prices, the same increase in employment would have occurred. The lower price would have caused D_0 to shift out, increasing the amount of labor demanded at the wage W_0.) Since the subsidized industries generate

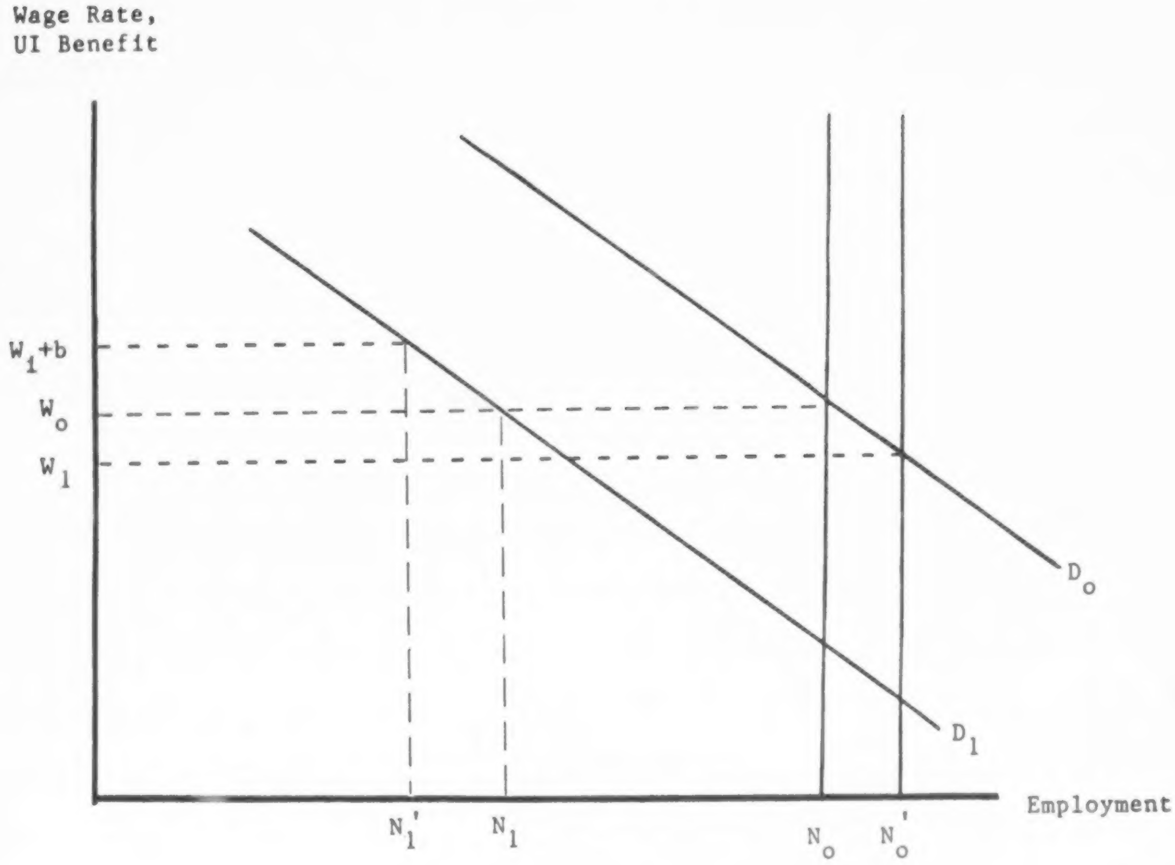

Figure 2. The Effect of UI on Employment

the expansion of unstable industries and the contraction of stable industries. We just have very little evidence on the magnitudes of these effects.

B. Effects on Employment Fluctuations

Remember that for the typical firm $\underline{e} < 1$ --- an extra dollar of benefits paid out to its employees raises its taxes by less than one dollar. Part of the cost of benefits is shared among all companies in the state UI system. How large is $\underline{e}$? A study of 9 states during 1971-78 showed that benefits charged to employers with negative balances averaged around 20 percent of all benefit payments (Wandner-Crosslin, 1980). That study also found that noncharged benefits amounted to around 15 percent of the total, a result corroborated (Hibbard, 1980) by data for 8 other states in the years 1971-75. Yet another study (Becker, 1981, Table 8) demonstrated about the same extent of noncharging and a similar importance of benefits paid to employees of negative-balance employers for 9 states in 1978. Data for 1983 for 12 states show that benefits charged to positive-balance employers and to negative-balance employers up to their tax contributions equalled 52 percent of all benefit payments (Office of the Inspector General, 1985). Finally, ignoring noncharged benefits, data for 19 reserve- and benefit-ratio states (Topel, 1984, Table 1) suggest that the cost to the typical employer of an extra dollar of UI benefits is only around 80 cents.

Taking all the evidence together, it seems fairly clear that $\underline{e}$ was between one-half and two-thirds during the 1960s and 1970s. Other data (Office of the Inspector General, 1985) suggest that $\underline{e}$ fell during the early 1970s. The substantial widening of the range of tax rates in 1985 has probably raised e̲ in the late 1980s. However, the continued existence of noncharged benefits, and the many firms whose benefit payments far exceed even 10 percent of their taxable payroll, mean that the average extent of experience rating is today probably no more than 75 percent.

Incompletely experience-rated unemployment insurance not only shifts resources to the subsidized, unstable industries, as Section A showed; it also provides incentives for many companies to choose to lay off workers rather than spread work by reducing hours when product demand declines. This point has been well-known since the advent of UI:

> Though a compensation system might tend to cause employers to lay off or discharge workmen [sic] because provision had been made for their maintenance, rather than to permit them to share in the work available, this tendency can be checked by merit [experience] rating....(Millis-Montgomery, 1938, p. 176)

Recent theoretical work has formalized this observation and examined some of its ramifications (for example, Feldstein, 1976; Baily, 1977; Burdett-Hool, 1983; and Burdett-Wright, 1988). To understand why it occurs, consider the company shown in Figure 2. In the absence of unemployment insurance it employs N_0 workers in good times, and only N_1 workers in bad times. Because of the drop in demand for its product, its demand for labor shifts from D_0 to D_1. The number of workers it wishes to employ at the going wage W_0 is reduced to N_1. What if the company can pay UI benefits that are only incompletely experience rated? In addition to the expansion of the industry in good times to N'_0, the employer now has an incentive to reduce employment in bad times to N'_1.

below N_1. This raises workers' incomes on average over the cycle, because more of them can collect b dollars of benefits during bad times. By offering a wage-employment package that provides UI benefits during bad times, the employer can attract workers for a wage below W_0, say W_1. (If it kept the wage at W_0, it would have a surplus of potential employees seeking jobs in the company.) The employer is willing to offer this deal because its taxes do not rise one-for-one with each dollar of benefits paid --- precisely because the degree of experience rating e is less than one.

This discussion suggests that: 1) Employers with substantial noncharged benefits; 2) Negative-balance employers; 3) Companies that are at t_{max}, and 4) Firms whose reserve-ratio exceeds R^* in states where $t_{min} > 0$, will all have an incentive to increase layoffs above what they would be if experience rating were complete or if there were no UI system. The incentive is greater where the product-demand cycle that produces the layoffs is easily predicted, for employees are then more easily attracted to a company offering a slightly lower wage but the chance to receive substantial benefits during "UI vacations." This implies that seasonal and other temporary layoffs will be especially strongly affected by incomplete experience rating, as will permanent layoffs where business cycles are predictable. Other permanent layoffs, such as those stemming from increased foreign competition and other demand shocks, are not likely to be affected as much.

To some extent the heightened incentives to lay off workers are reduced by the existence of multiple tax schedules: Even though the benefits may not raise taxes this year, they may do so in future years as the state system shifts to a higher schedule (Brown, 1986; Wolcowitz, 1984). As Table 1 and Appendix Table 1 show, though, even today, and even on the least favorable schedule, the range of tax rates is often not very wide. There still exist incentives to expand layoffs, and thus to increase layoff unemployment.

Before 1987, when the Tax Reform Act of 1986 became effective, the incentive to lay off workers in bad times was even greater, because UI income was untaxed or only partly taxed. A dollar of benefits was worth more to the recipient than a dollar of (taxed) wages. This gave workers a still greater incentive to accept layoffs and gave their employers still lower costs, in the form of employees willing to work at lower wages than otherwise. Many of the recent studies of experience rating account for the differential taxation of UI benefits before 1987.

In the last 12 years substantial work has been done relating incomplete experience rating to employment fluctuations. We now know a fair amount about the size of its impacts on unemployment. More important, we know which characteristics of the UI tax structure produce most of these effects.

Table 3 summarizes the 10 available studies on this effect. (Only one study was published before 1977; it and the state of knowledge about UI taxes generally up to that time are summarized by Hamermesh (1977).) The various studies have mainly attempted to discover the effects of the tax structure on the layoff rate or the rate of unemployment resulting from layoffs. They have tried to distinguish between effects on permanent and temporary layoffs, and to look for special effects on seasonal variation in employment. Both efforts are based on the observation that the largest effects of incomplete experience rating will be on those flows into unemployment that are most expected, and among those workers who are likely to retain an attachment to the employer who lays them off.

The studies differ greatly in method, type of data and the structuring of the problem. In all studies, examining differences in the parameters of the states' UI tax systems allows the researcher to determine the impact of differences in experience rating. In some, though, the impact of state tax systems on individual experience may be muddied by the use of industry-level data on turnover measures. In many studies the parameters of the tax systems are considered separately rather than as contributory factors to the degree of incompleteness of experience rating, which in turn can directly affect turnover. While all the studies advance our knowledge, these considerations suggest that Saffer's second study and, especially, Topel's work are the most reliable.

While more research would be desirable, at this point it seems fairly safe to conclude that: 1) A higher t_{neg} or t_{max} reduces the layoff rate and the rate of layoff unemployment. This is so mainly for temporary layoffs and seasonal unemployment; the evidence for effects on permanent layoffs is more mixed. The effects are quite large. Indeed, Topel (1986), the only study to attempt an overall evaluation of the effect of incomplete experience rating, suggests that imposing complete experience rating would reduce unemployment by roughly 20 percent. This effect is probably too large to be believable: It is difficult to imagine that a program that taxes less than 1-1/2 percent of payroll can

TABLE 3
Studies of Experience Rating and Unemployment

Study	Data	Results
Brechling (1981)	Reserve-ratio states, 1962-69, manufacturing industries	Higher t_{neg} sharply reduces layoff rate; smaller effect of lower t_{min}
Edebalk-Wadensjö (1986)	Sweden 1954-69	Sharp decline in temporary layoffs after introduction of partial experience rating
Halpin (1979)	Three small manufacturing industries, 1960-74, 36 to 50 states	Reduced seasonal variability of employment where high tax base compared to wages; no consistent effects of other tax parameters
Halpin (1980)	41,000 individuals, 1976	Lesser chance of being on temporary layoff where: High tax base compared to wages; smaller gap between t_{max} and tax rate needed to fund negative balances
Kaiser (1987)	Reserve-ratio states, 1964-69, manufacturing industries	Higher t_{neg} sharply reduces layoff rate; high tax base reduces layoff rate
Saffer (1982)	States, 1967-75, data on industries	Larger gap between t_{neg} (or t_{max}) and t_{min} reduces layoff rate
Saffer (1983)	15,000 individuals, 1975	Lesser chance of being on temporary or permanent layoff if worker is in a state with a larger gap between t_{neg} (or t_{max}) and t_{min}
Topel (1983)	8000 individuals from 29 industries, 19 states, 1975	Lesser chance of temporary lay off, greater chance of returning to work with more complete experience rating; imperfect rating and not taxing benefits produced 30% of temporary layoff unemployment
Topel (1984)	34,000 individuals, from 29 industries, reserve- and benefit-ratio states, 1973-76	Lesser chance of being on temporary layoff in states and industries where UI subsidy is smaller; smaller effect on permanent layoff unemployment
Topel (1985)	76,000 men, 1977-81, reserve- and benefit-ratio states	Lesser chance of being on temporary layoff in states and industries where UI subsidy is smaller; smaller effect on permanent layoff and quit unemployment. Perfect experience rating would reduce unemployment rate by 1.5 percentage points.

account for 1.5 percentage points of unemployment in the entire labor force. The result indicates, though, how important the impact of some aspects of incomplete experience rating can be. 2) Beyond this effect, little else can be concluded from the available research about the effects of tax-rate policy. In particular, there is at best only sparse evidence that reducing t_{min} to zero has a discernable impact on layoff unemployment.

As Table 3 shows, empirical research has demonstrated that a higher tax base relative to taxable wages also reduces layoffs and seasonal unemployment. The reason to expect this is simple: For a particular set of tax rates, raising the tax base raises the tax liability of a negative-balance employer, or one at t_{max}, who lays off another worker. Raising the tax base is another way of increasing experience rating (see Brechling, 1977). Indeed, even though European UI systems are not experience rated, European employers rely less on temporary layoffs to meet drops in product demand. The reason may well be that in Europe UI taxes are essentially on a per-hour basis (because the ceilings are very high relative to wages) (Fitzroy-Hart, 1985).

C. Effects on the Employment Mix and on Worker-Hours Substitution

Because it is not applied in equal proportions to all workers, the UI tax will induce firms to substitute workers whose labor is taxed less heavily for workers whose labor is taxed more heavily. A highly cyclical business in Pennsylvania that employs a worker earning $8000 can pay a tax of $736 on that worker's wages (a tax rate of 9.2 percent applied to the $8000 tax base.) The same tax, $736, would be paid on the wages of a worker earning $40,000. In this case the low ceiling on the tax base raises the cost of employing the high-wage worker by 1.8

percent, so that the relative cost of employing the low-wage worker is increased by 7.4 percent (9.2 - 1.8). Assuming the workers' market wages reflect their skills and their value to the employer, the ceiling creates a powerful incentive to shift toward hiring higher-wage, more skilled employees.

These incentives can create two effects. First, if the wages of low-skilled workers do not fall when the demand for their services is reduced, fewer of them will be employed. Second, if their wages can fall, they will. In either case the net income of the population of low-skilled workers in the state will be reduced.

Say all 100 workers in a Pennsylvania company earn $12,000 per annum working a forty-hour week, and the employer is already rated at t_{max} on the highest state tax schedule. On September 1 the employer realizes that product demand is booming and decides to expand output by 25 percent. Many factors will affect the choice between hiring 25 more workers and asking current employees to work overtime. An additional, potentially substantial one is that the employer must pay UI taxes of 9.2 percent of wages on each new worker, but would incur no extra UI tax liability on overtime hours of current workers (because the $8000 ceiling means the tax liability on them vanished on August 31 for the remainder of the calendar year). The limit on the tax base thus creates an incentive to use more hours and fewer workers.

No one has studied the effects of the UI tax itself on the mix of workers. The huge body of research on the impact of changes in relative labor costs on the skill mix of workers, and the somewhat smaller set of research results on employers' ability to substitute hours for workers (Hamermesh, 1986; Hart, 1984), allow us to infer the probable impacts of the tax. Also, Hamermesh (1978) shows that greater UI coverage leads to greater reliance on employment reductions for a given drop in product demand. The evidence leads to the conclusions that: 1) Because the UI tax base is so close to the minimum wage (on an annual basis), it is unlikely that overtaxing low-wage employment can reduce the wage rates of low-skilled workers. Instead, it reduces the number employed. This effect is substantial, with each 1-percent increase in the relative cost of low-skilled workers lowering their employment by at least 1 percent. The low limit on the tax base relative to taxable wages has reduced the number of jobs for low-skilled workers. 2) We know that a rise in taxes that are assessed per worker leads employers to substitute extra hours per worker for employees, especially low-wage employees (Hart-Kawasaki, 1988; Wright-Loberg, 1987). We can conclude that to some unknown extent the low tax base has increased employers' reliance on overtime and reduced employment, especially of low-skilled workers.

III. Optimal Experience Rating and Tax Base

There are two fundamentally different views of the appropriate extent of experience rating. Most public-finance economists would argue that experience rating should be structured to ensure that the UI system as a whole produces the same employment, unemployment and industrial structure as would be produced in the absence of publicly-provided UI. From this viewpoint incomplete experience rating should be used to offset other taxes that produce distortions, such as other payroll taxes and income taxes (Boadway-Oswald, 1983). Under this view the UI tax should be used to increase the neutrality of the tax system, i.e., to minimize the distortions to the labor and other markets that taxes produce.

The alternative view, held by many specialists in UI and by some economists, is based on the nature of the employees' separation that generated the benefits that must be financed. Under this view one should attempt to distinguish between UI benefits that are due to the employer's actions and those that are beyond the employer's control, with only the former being charged to the employer. The latter, including perhaps benefits to voluntary quitters, long-duration claims and cyclical increases in benefits, should be spread across the state (or even the national) UI system (Halpin, 1978; NCUC, 1980). This view does not necessarily conflict with the other; rather, its intellectual basis is entirely different. The evidence in Section II.B shows that complete experience rating would essentially eliminate temporary layoff unemployment, and other evidence shows that most temporary layoffs return to their jobs. Proponents of this view should thus argue that taxes to finance all unemployment spells resulting from temporary layoffs should be fully experience rated.

UI tax policy should avoid increasing unemployment beyond what would occur in its absence if there were no social desire for publicly-provided benefits. Yet the existence of that desire means that financing an optimal level of benefits may require an incompletely-rated tax that increases unemployment and shifts resources toward certain industries. UI tax policy should not penalize employers for long-duration unemployment that is beyond their control. Yet long-duration unemployment can be lowered by reducing the number of workers becoming unemployed, and that can often be accomplished by increasing the extent of experience rating. These two considerations alone suggest there is no easy philosophical basis for choosing which implications of the two views to choose. As was recognized very early in the program:

> The degree of preference should be decided upon with due regard to the desire to further stabilization of employment on the one hand, and the safety of the fund and the desire to distribute the burden involved in carrying the cost with proper reference to ability to pay on the other. (Millis-Montgomery, 1938, p. 167)

The choice of goals has implicitly been made for more than fifty years by the political process at the federal and state levels. Temporary benefit programs enacted by the federal government to provide for workers who have exhausted regular benefits have generally not been financed by experience-rated taxes. (They have been financed out of general revenues or shared with state UI funds.) At the state level the philosophy underlying financing decisions is much less clear. Nonetheless, one can draw some inferences about the process that generates the tax structures by comparing interstate differences in taxes to differences in industrial and demographic characteristics. Experience rating is less complete where: 1) The distribution of employment is spread among more different industries; 2) Unemployment is concentrated especially heavily in a few industries; and 3) The largest industry accounts for an unusually large share of unemployment (Adams, 1985; Maloney-McGregor, 1988).

All three results support the conclusion that the financing of state UI benefits is largely a matter of attempts by powerful, high-unemployment industries to use legislation to gain subsidies from other industries. This suggests that neither viewpoint is dominant in state UI policy, and that one must instead argue that the efficiency and equity considerations under either viewpoint should prevail over the outcomes currently generated by the political process at the state level. Such a choice in favor of increased experience rating was made, at least implicitly, in 1982 when the federal government effectively mandated the imposition of a minimum t_{max} of 5.4 percent for state systems starting in 1985.

There has been less discussion of the optimal tax base. The only full-blown argument is for setting the base at 50 percent of the average wage, in the belief that this will minimize voluntary turnover (Brechling, 1977). Given that most voluntary turnover takes place within a few jobs, since most workers are long-term employees, and given the importance of objectives other than minimizing voluntary turnover, this argument seems quite minor. Instead, optimal policy on the tax base should take into account its role in the experience rating of UI taxes and its effect on the types of workers hired and employers' choices between workers and hours. From this viewpoint we have, by allowing the tax base to fall in relative terms, implicitly chosen to limit the effect on experience rating of the increased range of state tax UI rates; and we have increased the incentive the UI system provides employers to hire higher-wage workers, and to use more overtime rather than additional workers.

IV. Short-Time Compensation, Partial Benefits and UI Financing

Short-time compensation (STC) is in general an adjunct to UI programs that allows the payment of benefits to workers who are only partly unemployed. In some programs in various industrialized countries, and in those in the United States, benefits are paid on a *pro rata* basis. Thus, for example, workers whose employer relies on a 20-percent hours reduction for all workers rather than laying off 20 percent of the work force will receive wages for 80 percent of the workweek and short-time compensation equal to 20 percent of their regular weekly benefit amount. One can view STC as an attempt to make UI neutral with respect to employers' decisions about meeting declining product demand by layoffs instead of reductions in hours.

Since the inception of the UI program most state systems have provided *partial UI benefits* to be paid when a worker is unemployed for at least several days per week. In most states payments are structured so that the worker and employer are severely discouraged from using them (Munts, 1970). Eleven states, compared to only 6 in 1978, have now made their partial benefits provisions more conducive to worksharing by specifying that benefits are reduced by only a fraction of each dollar of earnings. In most of them, though, the rates of reduction are quite high: With the exceptions of Alaska and Montana, the other states that structure partial benefits this way decrease them by at least 66 cents for each additional dollar earned.

Feeling a need to encourage work-sharing, California in 1978 instituted its own STC program as part of the state UI system. Arizona and Oregon implemented STC programs in 1982, and in that year TEFRA required the Secretary of Labor to assist states in setting up STC programs. As of 1987 9 other states had implemented STC programs. Financial arrangements under the STC legislation differ sharply among the states. Arizona, California and Oregon charge surtaxes to negative-balance or other high-unemployment companies whose workers receive STC, as do three other states. In six other state systems, though, STC payments are treated the same as regular UI benefits that are charged to the employer (Johnson, 1987).

Part of the legislation implementing federal assistance to states in setting up STC programs required that an evaluation of these programs be carried out. This was met by Kerachsky et al. (1986), who did a thorough evaluation of all aspects of STC programs in Arizona, California and Oregon, based on a comparison of employers that used STC and otherwise similar employers that did not. In all states total payments under STC were tiny fractions of all UI benefits. Thus in 1982, the biggest year of the Arizona program, STC was $2.4 million, only 1.4 percent of all benefits; in the same year in California, the corresponding figures were $18.6 million and 0.8 percent (Johnson, 1987). Clearly, STC could not have had much impact even in the states that implemented the program.

The results of Kerachsky et al. relevant to this discussion are:

1. Workers in companies that used STC had more total hours of compensated time (by STC and regular benefits together) than did employees in otherwise identical firms.
2. Higher-wage employers were more likely to use STC, as shown by the higher benefit entitlements of their workers.
3. The administrative cost per hour compensated was higher for STC than for regular benefits.

The first and third conclusions corroborated a detailed study of STC in California (unfortunately done without a control group).

The experience documented by Kerachsky et al. (1986) in Arizona, California and Oregon is probably unusually favorable compared to STC in the other 9 states that adopted it. In all three states STC payments were more likely to be experience rated than regular UI benefits; in most other states that is not so. Also, seasonal work is probably more important in most other states than in these three; and seasonal employers (construction, agriculture) are relatively poorly experience rated. These considerations suggest that the potential for the STC program to generate more compensated hours than would otherwise occur is greater even than that found in these three states. As I have argued (Hamermesh, 1978), and as Kerachsky *et al.*'s findings suggest, *STC not only leads to a greater reliance on worksharing relative to layoffs; it also produces a larger reduction in the total number of hours worked*.

A wider application of STC would probably reduce layoff unemployment and *spread work* among more people during slack times. However, it demonstrably *reduces the total amount of work* available too, though there is not sufficient evidence on how large this effect is. Also, because STC is not completely experience rated, it increases the extent of cross-subsidization implicit in the UI system. If no other characteristics of the UI system, including the tax structure, the tax base and partial benefit formulae, can be altered, STC is a potentially effective tool if the only concern is worksharing. It is a costly one, though; and there are other means within the UI system of accomplishing the same goal with a less adverse impact on the labor market and lower administrative costs.

V. Policy Alternatives

Any policy for ameliorating the effects of UI on employment and wage outcomes must confront the necessity of maintaining fund solvency. UI has as its basic purpose maintaining living standards for unemployed workers, not improving labor-market efficiency (Hamermesh, 1982). This means that, while some proposals might appeal to one's desire to reduce unemployment, the need to maintain confidence in the widely-accepted UI program requires that desirable policies both reduce unemployment/ increase labor-market efficiency and improve funding of the program without raising its budgetary cost. Most of the proposals are not new. However, the confluence of growth in the available evidence on the effects of UI financing and major changes in financing during the 1980s mean that the discussion can be more confident and can take account of the changed conditions of the UI system.

PROPOSAL 1: INCREASE THE FUTA TAX BASE

The National Commission on Unemployment Compensation (1980, pp. 85-86) recommended raising the tax base to 65 percent of average annual taxable wages (AAW) over a period of time. The FUTA base was originally the same as the tax base under Old Age and Survivors' Insurance; in 1989 that base is $48,000, while the FUTA base is $7000. Following the NCUC recommendation by increasing the FUTA base to 65 percent of AAW would, as columns (1) and (3) of Table 4 show, have raised the average tax base nationwide in 1988 by over 50 percent. A still more radical proposal, requiring that the base equal twice the average benefit (in light of the notion that UI replaces 50 percent of pre-tax earnings), would, as Table 4 shows, have resulted in much a larger increase, as would a uniform doubling of the FUTA base to $14,000. The simplest policy change, and the one I shall discuss, is that the FUTA tax base in any year shall equal 65 percent of the national AAW two years earlier, with the policy phased in over a two-year period.

Based on the theory and evidence presented here, the arguments for this policy are:

1. The current low tax base means that we are using a tax on the employment of low-wage workers to finance the operation of state employment services (since the major use of FUTA revenues is as grants for administration of these services). Using a highly regressive tax to fund an institution that benefits the entire economy is unusual, and perhaps unique.

2. Forcing states to tax a larger share of total earnings would make experience rating more complete. It would clearly widen the fraction of charged benefits that are effectively experience rated. It would, as the evidence shows, lessen the incentives for employers to rely on temporary layoffs to meet reduced product demand, and would increase their reliance on worksharing instead.

3. In the short run increasing the base would lead to a build-up of state UI reserves (see the Appendix). This would occur when the reserves are nowhere nearly sufficient to meet requirements of a recession like that of 1974-75 or 1981-82. The short-term increase in state UI taxes would occur at a time when the economy is booming.

4. The proposal would make the state UI systems more flexible, as fewer firms' tax liabilities would be limited by maximum tax rates. It would probably not result in higher taxes on employers after the initial period of phase-in. There is only weak evidence (see the Appendix) that benefit amounts, which are the main proximate cause of higher state UI taxes, tend to increase when the base is raised.

The arguments against the proposal are:

1. It might result in larger state programs, as legislators use the increased base to vote higher benefit formulae. At the least, it would mean a vast enlargement of FUTA revenues, as the higher base is combined with the currently very high FUTA tax rate of .8 percent.

2. If the imposition of this policy is delayed, it could produce a tax increase just at the time the economy is sliding into a recession.

The sharp increase in state maximum UI tax rates required by TEFRA has probably gone part way toward making experience rating more complete. The effects have, though, been partly offset by the continuing decline in the tax base relative to AAW. The higher tax

TABLE 4

The Impact of Tax Base Policies

STATE	1988 Actual	Base = Average Benefit Times 2	Base = AAW Times .65	Uniform $14,000
California	$7,000	$17,264	$14,562	$14,000
Florida	7,000	20,800	11,583	14,000
Illinois	9,000	18,304	14,533	14,000
Massachusetts	7,000	24,544	13,758	14,000
Michigan	9,500	25,168	15,666	14,000
New Jersey	12,000	25,064	14,851	14,000
New York	7,000	18,720	15,605	14,000
Ohio	8,000	16,328	13,809	14,000
Pennsylvania	8,000	26,208	12,962	14,000
Texas	8,000	21,840	13,785	14,000
ALL STATES	$8,535	$19,443	$13,504	$14,000

rates on the smaller base have increased the regressivity of the tax and hurt labor-market outcomes for low-skilled workers. To increase fund solvency and its ability to handle cyclical demands, and to reduce detrimental side-effects on the labor market, this proposal should be adopted. However, to prevent a substantial enlargement of state bureaucracies and the build-up of very large loan funds, the 0.8 percent FUTA tax rate should be cut as the base rises. A policy like the following would index FUTA revenues without raising the share of FUTA taxes in employment costs, and would meet the goals outlined above:

Year	1990	1991	1992 and thereafter
Base as Percent of AAW	50	57.5	65
FUTA Tax Rate	.65	.6	.5

PROPOSAL 2: INCREASE MAXIMUM STATE UI TAX RATES

The National Commission on Unemployment Compensation (1980, pp. 93) recommended raising state tax maxima so that, "the vast majority of benefit payments are effectively charged...." Presumably this implies an increase in the creditable component of the FUTA tax rate even beyond the 5.4 percent that became effective in 1985. Other than indicating that the maximum tax should increase if we wish to make experience rating more effective, no specific increase is implied by the evidence. The arguments for an increase are:

1. Even with the increases in tax maxima documented in Table 1, there still are many negative-balance employers. This means that all the potentially detrimental effects on the labor market induced by incomplete experience rating still exist, though perhaps not to the same degree as before 1985.

2. The studies summarized in Table 3 show the especially strong impact of low state tax maxima on rates of temporary layoffs and the unemployment rate. Raising the creditable part of the FUTA tax still further would force states to raise their tax maxima still further, thus reducing incentives for layoffs and the cyclical instability of employment.

3. Increases in state tax maxima would in the short run increase UI tax revenues and help replenish depleted state UI reserves.

The arguments against the proposal are:

1. The evidence on the effects of state tax maxima is based on the pre-1985 environment. It is not clear that the beneficial impacts of raising maxima still further will be so large, now that the system is probably more completely experience rated.

2. Raising tax maxima *in vacuo*, as was effectively done under TEFRA, makes UI taxes more regressive and increases employers' biases in favor of substituting hours for workers. By itself the proposal would reduce job opportunities and/or earnings for low-wage workers.

There is substantial evidence that some employers generate cost rates in excess of 10 percent year after year. The proposal would reduce cross-subsidies to these employers; and the evidence clearly shows its impact in reducing layoffs. However, today's very low tax base relative to AAW means that by itself it would harm low-wage workers' labor-market prospects. *This proposal should be adopted, but only along with Proposal 1*.

PROPOSAL 3: REQUIRE THAT MINIMUM STATE UI TAX RATES BE ZERO

This has been proposed by many economists in the last 12 years, including this author and most of those cited in Table 3. The National Commission on Unemployment Compensation (1980, p. 93) recommended against it. The argument for it is:

1. It would improve experience rating and reduce the detrimental effects of UI on the structure of employment and on employment fluctuations.

The arguments against it are:

1. The evidence suggests that lower tax minima have small impacts on layoff rates. While the incentives exist, the responses are small.
2. In all states the cost of noncharged benefits is socialized. A zero minimum tax rate allows some employers to escape their share of these social costs.
3. There have never been even implicit federal standards for state tax minima. It is not worth creating this new area of federal interference in state programs.

Tax minima are already very close to zero: Even on the least favorable tax schedules, 21 states had minimum rates below 1 percent in 1988; nearly all states had minimum rates below 1 percent on their most favorable schedules. Given the apparently small changes in incentives that this proposal would produce and the evidence that these incentives have little impact on employment fluctuations, the only argument in its favor seems minor compared to the arguments against it. This proposal should not be adopted.

PROPOSAL 4: REQUIRE INTEREST CHARGES AND PAYMENTS ON EMPLOYERS' ACCOUNTS

Paying and charging interest on employers' accounts is another way to increase the experience rating of state systems. Interest at current short-term rates could be credited on positive balances and charged on negative balances. This would be similar to the crediting and charging of interest on states' balances with the federal UI trust funds.

Arguments in favor are:

1. The increase in experience rating would have all the desirable effects noted in Section II and discussed under Proposals 1-3.
2. Several studies (Bronars, 1985; Cottle-Macaulay, 1985) have demonstrated how this proposal could generate additional revenue for state systems.

3. The proposal is in accord with recommendations that most benefits be effectively charged to the employer.

4. The proposal accords with past practice that federal intervention in state programs operate through the tax system. It mirrors practices in existence since 1983 in the federal trust funds.

The negative arguments are:

1. At a time of fairly low interest rates, the size of the incentives created is likely to be small, especially relative to the extra administrative costs imposed.

2. There have never been federal standards for how states handle employers' reserves in state funds. It is not worth creating a new area of federal interference in state programs.

Despite the administrative costs, this proposal has merit. If short-term interest rates were 15 percent, as they were in 1980, it would provide powerful incentives to employers to avoid layoffs. The proposal is hardly a major extension of federal interference, since it does work through the tax system (although not through the FUTA tax rate itself). It should be adopted.

PROPOSAL 5: REQUIRE STATES TO LIMIT NONCHARGED BENEFITS TO A SMALL FRACTION OF TOTAL BENEFITS

In some states noncharged benefits can account for 50 percent of all regular benefits. This implies that, no matter how wide the range of tax rates may be, half the benefits cannot be effectively experience rated. The arguments in favor of this proposal are:

1. The standard arguments regarding the necessity for increased experience rating. It accords with calls for greater effectiveness of rating.

2. Discussion of this proposal would further a needed debate on the appropriate extent of experience rating in the UI system.

The counterarguments are:

1. This is a federal benefit standard and represents a substantial expansion of federal interference in state programs.

2. The interference is in an area on which there is no general agreement (see Section III). Why expand the federal role greatly if we do not know what the appropriate amount of noncharging is?

The lack of common agreement on the proper fraction of benefits to be charged, and the criteria for charging, suggest that this proposal should not be adopted. That conclusion is underscored by the implied change in the federal-state relationship that the proposal represents.

PROPOSAL 6: MORE WIDESPREAD ENCOURAGEMENT TO SHORT-TIME COMPENSATION

Providing more federal technical assistance to states that institute STC programs, or even encouraging such programs through the FUTA tax, could induce employers to rely more on worksharing and less on layoffs. The arguments in favor of such assistance/encouragement are:

1. Studies have demonstrated that STC does tilt employers' decisions toward hours reductions and away from layoffs. An expanded program would produce effects in the desired direction.
2. Other countries, particularly in Western Europe, have used expanded STC programs with apparent success.

The arguments against the program are:

1. The major evaluation study demonstrates that STC is expensive to administer and that it raises total benefit costs.
2. Both in state programs here and in STC in other countries the utilization rate is tiny. It has not had a perceptible effect on unemployment rates.
3. By increasing benefit payments for incompletely experienced-rated employers, STC increases the extent of cross-subsidization in the UI system.
4. Adopting Proposal 1 would produce a much greater increase in worksharing and a much larger decline in layoff unemployment without creating more federal interference in state programs and without generating new state bureaucracies.

Short-time compensation has not been target-efficient in the U.S.; and it probably generates negative side-effects. Its goals can be attained more readily with less radical changes.

VI. Conclusion

Legislated and administrative changes in the UI system during the 1980s probably reduced the program's detrimental effects on labor-market efficiency. They did so without changing the nature of the federal-state relationship that makes the program so unusual. Regrettably, though, they hurt the labor-market status of low-wage workers by greatly increasing the negative impact of UI taxes on the demand for their labor. This inequitable and socially dangerous side-effect of an otherwise desirable idea can be reversed if the policy changes proposed here are adopted. Their adoption would in addition provide employers with increased incentives to spread work rather than lay off employees, resulting in smaller employment fluctuations and a lower unemployment rate.

NOTES

1. The data used in this table, Tables 2, 4 and Appendix Tables 1 and 2 are from Comparison of State Unemployment Insurance Laws, revisions of August 1978 and September 1988. Additional data are from Employment and Training Administration, ET Handbook No. 394 and the supplements to it.

2. Vroman (1987, Table 1.6). The weighted averages in Table 2 are based on covered employment in 1978 and 1985 respectively; the AAW for 1988 are based on extrapolations from 1985. For these reasons, and because the national averages are apparently not weighted averages, the data differ slightly from those used in the Appendix.

A1. The data are all taken from Employment and Training Administration, ET Handbook No. 394 and the supplements to it.

APPENDIX TABLE 1

State UI Tax Schedules, 1978 and 1988, Smaller States

	YEAR							
	1978				1988			
	Most Favorable		Least Favorable		Most Favorable		Least Favorable	
STATE	T_{min}	T_{max}	T_{min}	T_{max}	T_{min}	T_{max}	T_{min}	T_{max}
Alabama	0.50	3.60	0.50	4.00	0.50	5.40	0.50	5.40
Alaska	0.60	3.10	3.00	5.50	1.00	6.50	1.00	6.50
Arkansas	0.00	4.00	0.10	4.00	0.00	5.90	0.10	6.00
Colorado	0.00	3.60	0.70	3.60	0.00	5.40	1.00	5.40
Connecticut	0.10	4.60	1.50	6.00	0.50	5.40	1.50	6.40
Delaware	0.10	3.00	0.50	4.50	0.10	8.00	0.10	8.00
District of Columbia	0.10	2.70	2.70	2.70	0.10	5.40	0.80	5.40
Georgia	.028	3.20	0.01	3.52	0.01	5.40	0.06	8.64
Hawaii	0.20	3.00	3.00	3.00	0.00	5.40	2.60	5.40
Idaho	0.20	3.20	2.70	4.40	0.10	5.40	2.90	6.80
Iowa	0.00	4.00	0.80	6.00	0.00	5.40	0.00	9.00
Kansas	0.00	3.60	0.00	3.60	.025	5.40	.025	5.40
Kentucky	0.10	3.20	2.70	4.20	0.30	9.00	1.00	10
Louisiana	0.10	2.70	2.70	3.90	0.30	6.00	0.30	6.00
Maine	0.50	3.10	2.40	5.00	0.50	5.40	2.40	6.50
Maryland	0.10	2.90	3.00	4.20	0.10	5.40	2.80	6.00
Minnesota	0.10	7.50	1.00	7.50	0.10	8.00	0.80	8.00
Mississippi	0.00	2.70	2.70	2.70	0.10	5.40	0.10	6.40
Missouri	0.00	3.60	0.50	4.10	0.00	5.40	0.00	7.80
Montana	0.50	3.10	3.10	3.10	0.00	6.40	1.70	6.40
Nevada	0.60	3.00	1.10	3.50	0.30	5.40	0.30	5.40
New Hampshire	0.01	2.10	2.80	6.50	0.01	6.50	2.80	6.50
New Mexico	0.10	4.20	2.70	5.10	0.10	5.40	2.70	5.40
North Dakota	0.20	4.20	2.70	4.20	0.10	5.40	0.10	5.40
Oklahoma	0.10	3.10	0.40	3.70	0.10	5.50	0.50	6.20
Oregon	1.20	2.70	2.60	4.00	0.90	5.40	2.20	5.40
Rhode Island	1.00	2.80	2.20	4.00	0.80	5.40	2.30	8.40
South Carolina	0.25	4.10	1.30	4.10	0.19	5.40	1.24	5.40
South Dakota	0.00	4.50	4.10	4.10	0.00	8.00	1.55	9.75
Tennessee	0.30	4.00	0.75	4.00	0.15	10	0.50	10
Vermont	0.20	2.70	1.20	5.50	0.40	5.40	1.30	8.40
West Virginia	0.00	3.30	2.70	3.30	0.00	7.50	1.50	7.50

APPENDIX TABLE 2

The UI Tax Base, 1978 and 1988, and Selected Alternatives

	Base	Base AAW	Base	Base AAW	Base if Equals 2*Bens	Base if Equals .65*AAW
STATE	1978	1978	1988	1988	1988	1988
Alabama	$ 6,600	.610	$ 8,000	.444	$12,480	$11,702
Alaska	10,000	.483	21,100	.705	19,552	19,448
Arizona	6,000	.528	7,000	.369	15,080	12,340
Arkansas	6,000	.619	7,500	.455	21,528	10,708
Colorado	6,000	.508	10,000	.479	22,256	13,568
Connecticut	6,000	.474	7,100	.306	22,464	15,065
District of Columbia	6,000	.436	8,000	.324	27,872	16,032
Delaware	6,000	.447	8,500	.401	21,320	13,769
Georgia	6,000	.551	7,500	.388	17,160	12,566
Hawaii	9,800	.906	8,700	.503	23,192	11,242
Idaho	9,600	.895	16,200	.926	20,072	11,376
Indiana	6,000	.476	7,000	.346	10,192	13,159
Iowa	6,500	.579	11,000	.633	18,096	11,301
Kansas	6,000	.546	8,000	.432	21,840	12,032
Kentucky	6,000	.525	8,000	.438	17,264	11,873
Louisiana	6,000	.502	8,500	.423	19,864	13,075
Maine	6,000	.620	7,000	.423	17,784	10,746
Maryland	6,000	.515	7,000	.352	21,320	12,925
Minnesota	7,500	.635	11,700	.579	26,416	13,129
Mississippi	6,000	.631	7,000	.436	15,080	10,444
Missouri	6,000	.510	7,500	.377	14,560	12,923
Montana	6,000	.572	12,600	.748	19,240	10,952
Nebraska	6,000	.578	7,000	.421	13,936	10,796
Nevada	6,900	.584	12,000	.631	19,136	12,367
New Hampshire	6,000	.588	10,800	.581	16,224	12,077
New Mexico	6,100	.580	10,800	.612	16,536	11,474
North Carolina	6,000	.600	10,100	.582	23,712	11,278
North Dakota	6,000	.575	11,000	.657	19,032	10,880
Oklahoma	6,000	.526	9,100	.461	20,488	12,818
Oregon	8,000	.661	14,000	.741	23,816	12,288
Rhode Island	6,000	.593	12,000	.684	24,960	11,396
South Carolina	6,000	.601	7,000	.413	15,288	11,011
South Dakota	6,000	.656	7,000	.479	14,560	9,492
Tennessee	6,000	.573	7,000	.389	16,120	11,705
Utah	9,600	.871	13,200	.715	21,008	12,001
Vermont	6,000	.601	8,000	.466	17,576	11,164
Virginia	6,000	.561	7,000	.373	18,304	12,203
West Virginia	6,000	.473	8,000	.406	23,400	12,796
Washington	8,400	.642	15,100	.763	21,736	12,871
Wisconsin	6,000	.505	10,500	.557	20,800	12,251
Wyoming	6,000	.478	10,200	.503	20,800	13,186

APPENDIX: A Model of Benefits, Taxes and the Tax Base

To examine whether a higher tax base automatically leads to higher taxes and/or higher benefits as UI administrators and legislators try to spend an apparent revenue windfall, I estimated two models of taxes and benefits. The first consists of:

$$(1)\quad TAXRAT_t = a_0 + \sum_{0}^{4} a_{1i} BASTOT_{t-i} + \sum_{1}^{4} a_{2i} BENTOT_{t-i} + \sum_{1}^{4} a_{3i} TAXRAT_{t-i} + \epsilon_{1t} \text{ ,}$$

and:

$$(2)\quad BENTOT_t = b_0 + \sum_{0}^{4} b_{1i} IUR_{t-i} + \sum_{1}^{4} b_{2i} BENTOT_{t-i} + \sum_{1}^{4} b_{3i} TAXRAT_{t-i} + \epsilon_{2t} \text{ ,}$$

where TAXRAT is the ratio of state UI taxes to total payroll; BASTOT is the ratio of taxable to total payroll; BENTOT is the ratio of regular benefits paid to total payroll; and IUR is the covered unemployment rate. All variables are measured as percentages. Through equation (1) this model allows for a direct effect of a higher tax base on taxes. It allows for indirect effects through (2), as a higher base can raise taxes through the lagged effects of the higher TAXRAT feeding back through higher benefits onto future taxes. The model allows us to test for causality, in particular, to answer the crucial question whether the $b_{3i} = 0$, i.e., whether higher taxes lead to higher benefits.

The model does not allow for the possibility of a direct effect of a higher taxable base on benefit payments independent of the effect of the base on benefits through its possible effect on the ratio of taxes to total payroll. To do so respecify (2) as:

$$(2')\quad BENTOT_t = b'_0 + \sum_{0}^{4} b'_{1i} IUR_{t-i} + \sum_{1}^{4} b'_{2i} BENTOT_{t-i} + \sum_{1}^{4} b'_{3i} TAXRAT_{t-i} + \sum_{0}^{4} b'_{4i} BASTOT_{t-i} + \epsilon'_{2t} \text{ .}$$

The VAR models (1) and (2), and (1) and (2′), are estimated on annual data for the entire United States, with $t = 1950,\ldots,1986$.[A1]

The results of the estimation are shown in Appendix Table 3. The first thing to note is that benefits "Granger-cause" taxes, as should not be surprising. Taxes do not Granger-cause benefits: The F-statistics on the vectors of coefficients b_{3i} and b'_{3i} are not significantly different from zero even at the 90-percent level.

A test of the joint significance of b'_{3i} and b'_{4i} yields $F(9,17) = 1.91$, also not significantly different from zero at the 90-percent level. However, a test of the joint significance of the b'_{4i} alone yields $F(5,17) = 2.80$, different from zero at the 90-percent level of confidence (though not at the 95-percent level). There is only weak evidence that a higher base affects benefits. A higher base does, though, affect the ratio of taxes to total payroll, at least in the short run: The vector of coefficients a_{1i} is significantly different from zero ($F(5,23) = 6.92$) at all conventional levels. Interestingly, while the immediate direct effect of an increase in the base is huge ($a_{10} = 1.57$), the long-run effect must be minute, for $\Sigma\hat{a}_{1i} = -.018$). This implies that the steady-state impact of raising the tax base in model (1)-(2) will be essentially zero.

Reestimates of the models including time trends added little. None of the trend terms was signficantly different from zero, and the changes in the a_{ji} and b_{ji} and in their sums were qualitatively unimportant. This and the very high values of the $\bar{R}^2$ for the equations suggest that the two models can be useful for simulating the effects of policy changes involving the tax base.

A number of simulations of such policies were carried out using the models. I concentrate here on policies that would have: 1) Raised the tax base to 65 percent of taxable wages in 1978; and 2) Raised it to 65 percent in equal increments over a three-year period. The year 1978 is chosen because the base was raised substantially then, and because choosing it allows sufficient time to infer the long-run effects of the policy change. Appendix Table 4 shows the actual values of BASTOT from 1978-86 and their values under the two simulations. The first half of the table shows the results of simulating changes in the system (1)-(2); the second half shows simulation results based on (1)-(2').

If we use (1)-(2), implicitly assuming, as standard statistical tests suggest is not unreasonable, that a higher base has no direct long-run effects on benefits, the results suggest that there are no indirect effects either. Moreover, while raising the tax base does raise TAXRAT in the short run, there is no long-run effect of a higher base on the rate of taxation. Unless something happens to raise benefit payments (in this model, higher insured unemployment), state funds reap a temporary windfall when the base is raised, but tax rates adjust downward within five years. At that point total taxes are unchanged from what they would have been if the base had not been altered, given the same rules on benefit payments and the same number of weeks claimed. The results are similar for the two simulations. The main difference is unsurprisingly that the phased increase in the base produces smaller effects each year but takes longer before the steady state is reached.

The conclusions change sharply if one simulates the effects in the system (1)-(2'). The direct effects of BASTOT in (2') are not significant, and their sum is -.0369. But because the higher tax base has a large direct initial effect ($b'_{40} = 1.39$), the continuing substitution of 65 percent for the actual, lower values of BASTOT raises benefits, and hence the taxes that finance them (since the system is self-financing).

What can one conclude from this? The strongest evidence is that taxes are independent of the base in the long-run, so that a higher base is eventually met by offsetting reductions in tax rates as employers move down experience-rated schedules. In the short run a higher base does, though, raise taxes that finance regular state UI benefits. This suggests that an increase in the base should be imposed at a time when the effects of the short-run tax increase on business will be least onerous. The estimates indicate that a long-run increase in benefits is a possibility, though the results are only marginally significant. Even if they were significant, though, they ignore the decline in the insured unemployment rate that would occur as a higher base produces more complete experience rating and thus reduces total benefit costs by reducing employment fluctuations. We may conclude that on net it is not apparent that increasing the base produces long-term increases in total UI taxes.

APPENDIX TABLE 3

Estimates of a Model of UI Tax Rates and the UI Tax Base, 1950-86

	Dependent Variable		
	Taxes/ Total Payroll	Benefits/ Total Payroll	Benefits/ Total Payroll
Base/AAW (Current value and 4 lags)	1.5699		1.3936
	0.3226		-1.4336
	-1.4203		1.5467
	-0.1520		-0.4051
	-0.3377		-1.1385
Insured unemployment rate (Current value and 4 lags)		0.3463	0.3499
		-0.2712	-0.2761
		0.0605	0.1000
		-0.1221	-0.0918
		-0.0099	-0.0101
Benefits/ Total Payroll (4 lags)	0.2120	0.7582	0.7755
	0.1860	-0.1523	-0.2667
	0.1078	0.3863	0.3280
	0.0963	0.0066	0.0299
Taxes/ Total Payroll (4 lags)	0.3330	-0.0129	0.0235
	-0.0289	-0.1232	-0.4203
	0.0602	0.2259	0.4351
	-0.0177	-0.1015	-0.0702
Adjusted R-squared	0.968	0.981	0.987
F-Statistics on Vectors of Lagged Endogenous Variables			
	35.05** F(4,23)	0.56 F(4,22)	2.02 F(4,17)

**Significant at the 99-percent level of confidence

APPENDIX TABLE 4

Simulations of the Effects of Increasing the Tax Base

Model (1)-(2)

	Actual Values			Simulation 1			Simulation 2		
	BASTOT	TAXRAT	BENTOT	BASTOT	TAXRAT	BENTOT	BASTOT	TAXRAT	BENTOT
Year									
1978	.496	1.37	0.93	.65	1.65	0.93	.50	1.41	0.93
1979	.474	1.42	0.94	.65	1.77	0.92	.55	1.49	0.93
1980	.447	1.06	1.34	.65	1.39	1.28	.60	1.41	1.31
1981	.423	1.02	1.17	.65	1.27	1.15	.65	1.43	1.16
1982	.405	1.02	1.72	.65	1.18	1.64	.65	1.37	1.60
1983	.431	1.20	1.43	.65	1.25	1.33	.65	1.35	1.32
1984	.428	1.39	0.92	.65	1.32	0.90	.65	1.37	0.91
1985	.415	1.29	0.95	.65	1.23	0.97	.65	1.25	0.97
1986	.407	1.14	0.98	.65	1.15	0.97	.65	1.16	0.96

Model (1)-(2′)

	Actual Values			Simulation 1			Simulation 2		
	BASTOT	TAXRAT	BENTOT	BASTOT	TAXRAT	BENTOT	BASTOT	TAXRAT	BENTOT
Year									
1978	.496	1.37	0.93	.65	1.63	1.17	.50	1.40	0.96
1979	.474	1.42	0.94	.65	1.81	1.13	.55	1.49	1.04
1980	.447	1.06	1.34	.65	1.49	1.60	.60	1.43	1.51
1981	.423	1.02	1.17	.65	1.43	1.58	.65	1.50	1.48
1982	.405	1.02	1.72	.65	1.43	2.04	.65	1.51	1.99
1983	.431	1.20	1.43	.65	1.55	1.68	.65	1.57	1.73
1984	.428	1.39	0.92	.65	1.65	1.22	.65	1.66	1.30
1985	.415	1.29	0.95	.65	1.56	1.25	.65	1.58	1.30
1986	.407	1.14	0.98	.65	1.46	1.22	.65	1.50	1.25

REFERENCES

Adams, James. "Equilibrium Taxation and Experience Rating in a Federal System of Unemployment Insurance." Journal of Public Economics 29(1986): 51-77.

Baily, Martin. "On the Theory of Layoffs and Unemployment." Econometrica 45(July 1977): 1043-1064.

Becker, Joseph M. Unemployment Insurance Financing. Washington: American Enterprise Institute, 1981.

Boadway, Robin and Andrew Oswald. "Unemployment Insurance and Redistributive Taxation." Journal of Public Economics 20(1983): 193-210.

Brechling, Frank. "The Incentive Effects of the U.S. Unemployment Insurance Tax." Research in Labor Economics 1(1977): 41-102.

---------------. "Layoffs and Unemployment Insurance." In S. Rosen (ed.), Studies in Labor Markets. Chicago: University of Chicago Press, 1981.

Bronars, Stephen. "Fair Pricing of Unemployment Insurance Premiums." Journal of Business 58(1985): 27-47.

Brown, Eleanor, "Unemployment Insurance Taxes and Cyclical Layoff Incentives." Journal of Labor Economics 4(January 1986): 50-65.

Burdett, Kenneth and Bryce Hool. "Layoffs, Wages and Unemployment Insurance." Journal of Public Economics 21(1983): 325-357.

-------------- and Randall Wright. "Optimal Firm Size, Taxes and Unemployment." CARESS Working Paper #88-05, University of Pennsylvania, 1988.

Chinloy, Peter. "Unemployment Insurance and Unemployment." Unpublished paper, University of British Columbia, 1980.

Cottle, Rex and Hugh Macaulay. "Property Rights and Unemployment Insurance Reserves." Policy Sciences 18(1985): 127-139.

Deere, Donald. "Unemployment Insurance and Unemployment." Unpublished paper, Texas A&M University, 1988.

Edebalk, Per Gunnar and Eskil Wadensjö. "Temporary Layoff Compensation and Unemployment: The Case of Sweden." Unpublished paper, Swedish Institute for Social Research, Stockholm, October 1986.

Feldstein, Martin. "Temporary Layoffs in the Theory of Unemployment." Journal of Political Economy 84(October 1976): 937-957.

Fitzroy, Felix and Robert Hart. "Hours, Layoffs and Unemployment Insurance Funding: Theory and Practice in an International Perspective." Economic Journal 95(September 1985): 700-713.

Halpin, Terrence. Three Essays on the Effects of Experience Rating in UI. Ph.D. dissertation, Michigan State University, 1978.

---------------. "The Effect of Unemployment Insurance on Seasonal Fluctuations in Employment." Industrial and Labor Relations Review 32(April 1979): 352-362.

---------------. "Employment Stabilization." In National Commission on Unemployment Compensation, Unemployment Compensation: Studies and Research, Volume 2. Washington: NCUC, 1980.

Hamermesh, Daniel. Jobless Pay and the Economy. Baltimore: Johns Hopkins University Press, 1977.

---------------. "Unemployment Insurance, Short-Time Compensation and the Workweek." In National Commission for Manpower Policy, Work Time and Employment. Washington: NCMP, 1978.

---------------. "Social Insurance and Consumption: An Empirical Inquiry." American Economic Review 72(March 1982): 101-113.

---------------. "The Demand for Labor in the Long Run." In O. Ashenfelter and R. Layard (eds.), Handbook of Labor Economics. Amsterdam: North-Holland, 1986.

Hart, Robert. The Economics of Non-Wage Labour Costs. London: George Allen and Unwin, 1984.

----------- and Seiichi Kawasaki. "Payroll Taxes and Factor Demand." Research in Labor Economics 9(1988): 257-285.

Hibbard, Russell. "Solvency Measures and Experience Rating." In National Commission on Unemployment Compensation, Unemployment Compensation: Studies and Research, Volume 2. Washington: NCUC, 1980.

Johnson, Esther. Short-Time Compensation: A Handbook of Source Material. U.S. Department of Labor, Employment and Training Administration, Unemployment Insurance Service Occasional Paper 87-2, 1987.

Kaiser, Carl. "Layoffs, Average Hours, and Unemployment Insurance in US Manufacturing Industries." Quarterly Review of Economics and Business 27(Winter 1987): 80-99.

Kerachsky, Stuart, Walter Nicholson, Edward Cavin and Alan Hershey. An Evaluation of Short-Time Compensation Programs. U.S. Department of Labor, Employment and Training Administration, Unemployment Insurance Service Occasional Paper 86-4, 1986.

Maloney, Michael and Rob Roy McGregor. "Financing the Unemployment Insurance System and the Interest Group Theory of Government." Public Choice 56(1988): 249-258.

Marks, Denton. "Incomplete Experience Rating in State Unemployment Insurance." Monthly Labor Review 107(November 1984): 45-49.

McLure, Charles. "The Incidence of the Financing of Unemployment Insurance." Industrial and Labor Relations Review 30(July 1977): 469-479.

Millis, Harry and Royal Montgomery. Economics of Labor, Volume 2: Labor's Risks and Social Insurance. New York: McGraw-Hill, 1938.

Munts, Raymond. "Partial Benefit Schedules in Unemployment Insurance: Their Effect on Work Incentive." Journal of Human Resources 5(Spring 1970): 160-176.

------------- and Ephraim Asher. "Cross-Subsidies Among Industries from 1969 to 1978." In National Commission on Unemployment Compensation, Unemployment Compensation: Studies and Research, Volume 2. Washington: NCUC, 1980.

National Commission on Unemployment Compensation. Unemployment Compensation: Final Report. Washington: NCUC, 1980.

Office of the Inspector General, U.S. Department of Labor, "Financing the Unemployment Insurance Program Has Shifted from a System Based on Individual Employer's Responsibility Towards a Socialized System. Audit Report No. 03-3-203-03-315, August 1985.

Saffer, Henry. "Layoffs and Unemployment Insurance." Journal of Public Economics 19(1982): 121-129.

------------. "The Effects of Unemployment Insurance on Temporary and Permanent Layoffs." *Review of Economics and Statistics* 65(November 1983): 647-652.

Topel, Robert. "On Layoffs and Unemployment Insurance." *American Economic Review* 73(September 1983): 541-559.

------------. "Experience Rating of Unemployment Insurance and the Incidence of Unemployment." *Journal of Law and Economics* 27(April 1984): 61-90.

------------. "Unemployment and Unemployment Insurance." *Research in Labor Economics* 7(1985): 91-136.

------------. "Financing Unemployment Insurance: History, Incentives and Reform." Unpublished paper, 1986, forthcoming in W. Lee Hansen (ed.), *Unemployment Insurance: The Second Half Century*. Madison, WI: University of Wisconsin Press.

Vroman, Wayne. *The Funding Crisis in State Unemployment Insurance*. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research, 1986.

Wandner, Stephen and Robert Crosslin. "Measuring Experience Rating." In National Commission on Unemployment Compensation, *Unemployment Compensation: Studies and Research*, Volume 2. Washington: NCUC, 1980.

Wolcowitz, Jeffrey. "Dynamic Effects of the Unemployment Insurance Tax on Temporary Layoffs." *Journal of Public Economics* 25(1984): 35-51.

Wright, Randall and Julie Hotchkiss. "A General Model of Unemployment Insurance With and Without Short-Time Compensation." Research in Labor Economics 9(1988): 91-132.

------------- and Janine Loberg. "Unemployment Insurance, Taxes and Unemployment." Canadian Journal of Economics 20(February 1987): 36-54.

18. UTILIZATION OF PUBLIC AND PRIVATE JOB SEARCH MECHANISMS: THE EXPERIENCES OF EMPLOYERS AND EMPLOYEES

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Introduction

In this paper I will review the empirical literature on the use of public and private job search mechanisms by both employers and employees. The mechanisms among which potential employees choose include the United States Employment Service (ES), community agencies, private agencies, and newspaper ads, as well as more informal mechanisms such as direct walk-in (without referral) and checking with friends and relatives. Employers face the same set of mechanisms as they recruit applicants for available jobs, as well as obtaining referrals from current employees.

We will be concerned with the extent to which employers and employees use each of these mechanisms, as well as the effectiveness of each in producing successful job matches when used. Given that different mechanisms will be most appropriate for different firms, jobs, and prospective employees, we must consider how use and effectiveness vary across different groups of firms and individuals. Any policy prescriptions which we derive must take such variations into account.

The rest of this paper is laid out as follows: Section I includes an overview of the different mechanisms involved and general descriptions of their prospective costs and benefits to employers and employees. An economic framework for analyzing these mechanisms will also be discussed. Section II then reviews the available evidence on use and effectiveness of these mechanisms for employees and employers. Section III contains conclusions and implications for policy of this work.

I. Search Mechanisms Used by Employers and Employees: An Overview

When prospective employees are searching for work, many start by asking friends and relatives about their knowledge of available openings, especially where the latter work. It is virtually costless for the jobseekers to do so, and they often obtain valuable information about available jobs which they might otherwise never hear about. In a world in which jobs are very heterogeneous in terms of wages, nonwage characteristics, skill requirements, etc., information about these job characteristics from those already working there may be very useful for an employee who is considering filing a job application. If the job seems appealing, obtaining a recommendation from a current employee could be particularly valuable when applying for the job.[1]

Of course, most jobseekers do not limit themselves to talking with friends and relatives as they pursue work. Some apply directly to firms without obtaining referrals from employees there. This is particularly likely if the jobseekers have either called or visited the prospective employer and have found out about available jobs there for which they might be qualified.

Other methods of search are more formal and often involve mechanisms or institutions that act as labor market intermediaries.[2] For instance, checking newspapers for help-wanted ads is low in cost and often provides listings for employers seeking specific skills that the jobseeker might have. Registering with the public Employment Service (ES) is also quite costless and is generally required of Unemployment Insurance (UI) recipients.[3] However, many jobseekers do not use the Service in the belief that it primarily provides listings for the less-skilled and that they can find more appealing jobs through other means.[4] These other means often include private employment agencies for professional and managerial workers; school placement offices for students planning to enter these areas; labor unions for those who are union members in particular crafts; and community agencies for others. Once an offer is received from any of the mechanisms, the jobseeker can choose between accepting or rejecting it based on its wage and nonwage characteristics and other available opportunities.

Employers who are trying to fill an available position must similarly decide among these mechanisms in order to generate an appropriate number of job applicants, who are then screened in a variety of ways before offers are made. Employers are concerned about the quality of such applicants as well as the quantity, and want a number that will be high enough to ensure the hiring of qualified employees but not so high as to generate excessive screening costs.[5]

To meet these aims, some employers solicit referrals from current employees, believing that these employees will care enough about their reputations to only refer trustworthy applicants (who are in many ways like themselves).[6] It is also virtually costless for the employer to accept applications from walk-ins, though there is no pre-screening for the applicants. This makes particular sense for large employers who are well known to local residents (thereby generating many walk-ins), whose jobs do not require particularly high skills, and where turnover is large enough so that a stock of available applicants can reduce job vacancy rates. Posting help-wanted signs may also help to generate such walk-ins for high-turnover, high-vacancy firms.

Among more formal mechanisms for employers, listing openings with the Employment Service is another relatively costless way of generating applicants. However, many employers seem to feel that these applicants are often not serious prospects. For one thing, at least some workers who have registered with the Employment Service do so only because this is often a requirement for UI recipiency (in most states) and not because they are seriously interested in obtaining new employment right away.[7] Furthermore, the Service has come to be stigmatized in the eyes of many employers as a "last resort" referral source of primarily low-skilled applicants. In fact, some have claimed that the ES office staff does insufficient pre-screening of the referrals which they make, and that their goal is to maximize employment of the low-skilled rather than provide appropriate matches between employers and employees.[8] On the other hand, employers seeking a reliable and low-cost source of applicants in terms of numbers may still find the ES useful.

For employers seeking employees with more specialized skills, more costly mechanisms might be used to generate high quality applicants. These include the placement of ads in newspapers or professional journals, listings with private employment agencies, recruitment on college campuses, etc.

Another consideration for many employers who are government contractors is the need to generate a sufficient number of qualified female and minority applicants so as to meet their goals and timetables under "Affirmative Action" provisions. Informal mechanisms such as employee referrals or direct walk-ins may not be good mechanisms for doing so if current employees are primarily white males or if the local neighborhood is primarily white. More effective mechanisms for doing so may include use of the ES, ads in newspapers, and listing openings with community agencies (such as the Urban League).[9] Finally, we note that some unionized firms (especially construction contractors) simply rely on the union to generate employees who are trained and certified.[10]

While the particular characteristics of each search mechanism are quite unique, a number of generalizations about the choice process can be made which have enabled economists to formalize this process in search models. In particular, Holzer (1988) has modeled the employee's choice between various search methods, while Barron et al., (1985) and Holzer (1987) have done so on the employer side.

The employee model of search method choice suggests that, for any particular individual, an investment of time or money in any particular search method will have some effect on his probability of receiving an offer with particular wage and nonwage characteristics. Each individual therefore chooses how much to invest in each method in order to balance these costs and expected benefits.

The costs of each method, as well as its potential effects on offers and job characteristics, will vary across individuals. For instance, those living further away from attractive firms may find the mechanism of direct walk-in more costly, especially if transportation is a problem. Those with employed friends and relatives may find this mechanism more useful than those in poor neighborhoods or welfare households where fewer friends and relatives can provide useful contracts. Furthermore, the choices of employers about which recruiting mechanisms to use will often help to determine the usefulness of each for an employee with certain skills and training who is interested in a particular occupation or industry. Thus, low-skill employees may find the public ES worthwhile while high-skill employees choose private agencies and the like. Finally, an individual's overall level of interest in employment will generally reflect his skills, his need for income, other potential sources of income, etc., and will help to determine his use of any of the available methods.

A somewhat related set of concerns influence employers' choices among these methods. Employers must balance the costs of using each mechanism (in terms of direct monetary costs and personnel hours) against the expected benefits of filling vacant jobs with qualified personnel. The skill requirements of different jobs will have large effects on the appropriate mechanisms to use, as will the characteristics of the labor force and the reputation of the firm in the local area. For a given general level of skill required, firms must make long-term choices about using high wages, intensive training, or aggressive recruiting to attract (and retain) qualified employees.[11] Given the wage and training options chosen, the short-term recruitment decisions may be particularly important (especially for high-wage employees and/or those in whom a fair amount of training is invested).[12] "Extensive" vs. "intensive" strategies (i.e., those involving many or few applicants) with regards to recruitment and screening must also be chosen and will heavily influence the choice among methods of search.

Both employee and employer models therefore help to generate predictions about who will use different search mechanisms based on what is likely to be effective for different groups. We now turn to the empirical evidence on these issues to see whether the descriptions above and predictions of these models are borne out.

II. Empirical Evidence on Use and Effectiveness of Search Mechanisms

A. Employees

Over the years, a number of studies have been done on the methods used by employees while searching for work. Some (e.g., Reynolds (1951), Rees and Schultz (1970), Granovetter (1974)) use data generated by their own surveys of workers in a particular local labor market. More recently, several of the large micro datasets based on survey data which are regularly used by labor economists have incorporated questions on employee search methods that have been studied by many authors.

The questions used in different surveys often vary in terms of samples, formats, and basic wording. For instance, some questions focus on current/recent jobseekers and attempt to elicit all methods of search used within a specified period, such as the last month. These studies often target the current/recently unemployed and can have the disadvantage of underrepresenting the jobseekers who have successfully completed their searches.[13] But only by including the latter individuals can questions be included on which methods generated offers and which were accepted, from which we can infer the relative effectiveness of different methods.[14]

Alternatively, other surveys have questions which ask a random sample of employees about the methods they used while seeking their current/most recent jobs, and which actually led to the job which they accepted. If limited to the currently employed, those surveys will underrepresent less successful jobseekers who are currently unemployed. Results from other datasets, which focus particularly on young workers or heads of households and their spouses, cannot always be extrapolated to the rest of the labor force.[15]

Despite these differences across surveys, several findings have emerged from this literature which appear in virtually all of the datasets and studies described here. To illustrate these findings, I present data in Table 1 on the use and effectiveness of various search methods from a special Department of Labor survey of 2,000 people in 1974.[16] I use these particular data because they are probably the most broadly representative of the overall labor force, and because the results seem to be consistent with more recent data from a variety of surveys. Where needed, we will refer to these other data below.

In Table 1, we find the fractions of all jobseekers who have used each of several methods of search. We then find the fraction who obtained a job through each method, and the success rate for each method (i.e., the fraction successfully finding a job of all who used the method).

The results show that the two informal methods of search - i.e., checking with friends/relatives and direct application are the most frequently used and the most effective methods of job search. Each method is used by two-thirds or more of all job-seekers; and each accounts for about 30% of all jobs obtained.[17] The success rate for use of friends and relatives is particularly high relative to all other methods. If anything, the fraction of all jobs found through friends and relatives is even higher in other studies, reaching 50% or more in some cases.[18]

Furthermore, a number of studies indicate that the matches of employers and employees generated through friends and relatives are often the most successful. For instance, Holzer (1988) finds that these offers are the least likely to be rejected by the job applicant. A number of authors (e.g., Reid (1972), Breaugh (1981), Schwab (1982), Datcher (1983), and Taylor and Schmidt (1983)) find lower employee turnover rates out of these jobs than out of those generated by other mechanisms. Granovetter (1974) similarly finds that those hired through such referrals expressed higher job satisfaction. Some evidence of lower absenteeism (Breaugh, Taylor and Schmidt) has also been found for such individuals.[19] These studies thus seem to confirm the impression stated above that this mechanism provides trustworthy information and reasonable expectations about each other to both sides of the labor market.

Turning now to other methods of search, we find that newspaper ads are the next most frequently used and effective method, with a fairly high success rate. Together, the informal methods and newspaper ads account for about 78% of all hires, and all other methods account for fairly small fractions.

Among these, public and private employment services account for about 6% each of all hires. The rate of use for private agencies is relatively low but their success rate among users is quite high, as might be expected for a high-cost method used primarily by professional and managerial employees. The ES is used relatively frequently (28% of all jobseekers) but has the lowest success rate of any method. In part, this last finding may be due to job search requirements which often require UI recipients to register with the ES. However, the low fraction of all jobs obtained through this method suggests that other factors might limit the efficiency of the ES as well.[20] Furthermore, Taylor and Schmidt (1983) find low job tenure (or high turnover) and low job attendance (or high absenteeism) for employees hired from this mechanism.

Of course, there is variation across occupations, industries, and demographic groups in the use and effectiveness of these methods. By age group, Bradshaw's (1971) analysis of unemployed workers in the CPS shows less use of virtually all methods except direct application by the young. This lower search intensity overall seems to indicate either a lower cost of being unemployed to this group or perhaps their interest in a set of jobs where direct application is relatively more beneficial than among the broader range of jobs sought by adults. Holzer's (1988) findings on youth suggest similar overall patterns on both use and effectiveness to those appearing in Table 1.

Some clearer differences emerge when comparing black and white job seekers. Bradshaw finds a higher use of the ES (e.g., 41% for black males and 31% for white males in 1970) and lower uses of private agencies, newspapers, and direct application among blacks. These fractions are quite consistent with more recent data form the CPS as well. Holzer (1987) finds a bit lower frequency of use for each method within a specified month among unemployed young black males (ages 16 through 23) than white males. But the fractions receiving and/or accepting job offers when using these methods differ greatly. In particular, young blacks appear to be relatively less disadvantaged when using the ES and other formal mechanisms and much more disadvantaged with the informal methods, especially direct applications.

In fact, the monthly probability of obtaining employment through the ES was comparable or even a bit higher for blacks, which was true of no other method. Still, the fraction of jobs so obtained was under 5% for young black males and about 3% for young white males. In contrast, approximately 70% of young whites and 60% of young blacks achieve their jobs through the two informal methods; and disadvantages for blacks in the use of these two methods accounts for about 90% of the overall difference in rates of job-finding between the two groups.

The greater problems for blacks when using informal methods seem to reflect the greater role for subjective employer judgments and for family/neighborhood connections in the use of these methods, which will presumably disadvantage blacks. More formal procedures leave less room for these subjective factors, and the ES in particular may provide compensatory help for the black jobseeker. Still, the far lower role played by this method in our economy makes its usefulness for blacks rather limited.

Other differences appear in use of search methods by education and occupation. As might be expected, Corcoran et al., (1980) find fewer people who report having obtained jobs through friends and relatives among college-educated and/or professional/manager employees. Bradshaw also finds lower use of the ES and of direct applications for these employees but higher use of newspaper ads and private agencies, which target employees with more specialized skills. The Department of Labor study on which Table 1 is based also finds more clerical/sales workers obtaining jobs through the ES.

By industry, Bradshaw's summaries of CPS data show higher use of the ES by jobseekers who had worked in manufacturing but lower use by those in wholesale/retail trade and services. The latter, in particular, relied more heavily on newspaper ads, especially if their occupations were white-collar. Construction workers, on the other hand, used all of these methods less frequently and relied instead on their union locals for placement. But as the fraction of the construction industry that is unionized has declined rather dramatically in the last two decades, this generalization may no longer hold today.

Finally, we note variations in ES performance by size of office and/or area served (which are often correlated), such as urban vs suburban. Rees and Schultz find greater perceived effectiveness (by employers) in suburban areas, while the Department of Labor (1976) notes lower fractions of jobs listed but higher placement rates in smaller offices and areas. However, the available evidence in this issue remains quite limited.

Before concluding this section, we note that other analyses of the ES have not been uniformly negative. For instance, Sheppard and Belitsky (1965) find that 38% of those registered with the ES were referred to employers, and job-finding rates among those referred were substantially higher than among the non-referred (88% v. 64%). These findings have been confirmed by Johnson et al., (1985) for women, though not for men. Several more recent studies (e.g., Stevens (1979), Fairchild (1983)) have developed more careful procedures for analyzing ES performance and/or have recommended reforms designed to improve that performance. Experimental reforms in various states (e.g., instruction in general job search activities, providing results of aptitude tests to employers, and stationing services in public assistance centers) also show some potential at least for improving ES performance (Bendick, 1989).

It is unclear how various economic changes that have been occurring and will continue into the 1990's will affect the observed performance of the ES. As overall skill levels in the economy rise, even the more positive studies of the ES which were done to date may be less relevant for tomorrow's jobseekers. But in sectors and areas where labor shortages are growing (due to economic growth and the "Baby Bust"), there is at least a potential for the ES to play a more positive role. Unfortunately, there has been little analysis to date of how local or aggregate labor market conditions influence the use and effectiveness of the ES (or other search methods).

It is also important to note that the observed differences in outcomes between individuals who use different search methods might simply reflect the different characteristics of those individuals rather than the effects of the methods themselves. For instance, the low success rates and weak performance on the job of those who use the ES might occur because individuals with lower skills and/or work attachments use this method disproportionately, finding it to be among their best options, while those with better skills and work attachments use other methods which they find more useful. Thus the effects of different methods are not observed on randomly selected individuals. It is quite possible that the changes in the procedures and services performed by the ES, or even its replacement by other services, would produce few observed changes in the outcomes of the individuals who use it. However, the extent to which this is true cannot really be ascertained with any degree of certainty from the data described above.[21]

B. Employers

In this section, we consider data on the use and effectiveness of various search (or recruiting) mechanisms for employers. Obviously, the data on effectiveness for employers cannot be too much different from those for employees, since the job matches being considered encompass both sides. Still, some extra information can be gained by judging the employer side independently, since their recruitment decisions often help to determine what prospective employers will or will not find effective.

In Table 2 we consider data on the use of search methods that are drawn from the same Department of Labor study that was considered earlier (see Footnote 16). The study encompassed the behavior of about 600 firms in medium-sized cities in 1974. Other studies will also be referenced below in the discussion of these results.

In Table 2 we find the fraction of all employers who use each recruiting method and the fraction who have hired at least one worker in the last six months of 1974 for this method. The third column provides the success rate, or fraction of users hiring at least one person (i.e., Col. 1/Col. 2).

The results show employee referrals to be the most frequently used method of recruiting, and the one which generates the highest fraction of new hires. Newspaper ads are second in both categories, though direct application would clearly be higher if combined with gate hires. These results overall are very consistent with those presented in Holzer (1987a) from a different employer survey.[22] The relative rankings are also consistent with those that have appeared in surveys of executives administered by the Bureau of National Affairs, though the magnitudes are generally much larger in the latter. These discrepancies, however, appear to be caused by the non-representative nature of the sample and style of question used in the latter survey.[23] We also note the generally high success rates from using employee referrals and newspapers.

As for the ES, we find 27% of all employers using it and 14% reporting at least one hire in the last six months. The relatively high fraction of hires attributed to the ES, compared to the numbers suggested by data on employees, seems to represent the fact that many ES users are large firms who have done multiple hiring. In fact, these firms represent 36% of all job vacancies in the period covered by the Survey (though only a small fraction of these vacancies are actually listed with the ES). As a fraction of all recent hires (rather than the fraction of firms who have hired at least one worker), the ES appears to account for only about 3% (Holzer 1987a), which is more consistent with evidence presented earlier on employees.[24]

We also see from Table 2 that other recruiting methods are used far less frequently than those discussed above, and fewer firms actually have acquired new employees by using them. We do note, however, the high success rates for those who use private agencies (as well as for unions).

There is substantial variation across firms and jobs in recruiting method use, and most of the evidence here is consistent with what was observed for employees. For jobs requiring college degrees, we find less use of referrals and more use of newspaper ads (Holzer, 1987a). A similar finding occurs for professional, technical, and managerial jobs, where greater use is made of private agencies as well as newspaper ads and less use is made of the ES (Department of Labor, 1976; Bureau of National Affairs, 1979). For clerical workers, a broad range of formal and informal mechanisms are used, while for salespeople there is greater reliance on ads, private agencies, and employee referrals. For less-skilled blue-collar jobs, on the other hand, there is greater use of the ES as well as emphasis of referrals and walk-ins.

By industry, we find large firms, especially in manufacturing, making the most use of the ES and of walk-ins, and the least use of advertising (Holzer, 1987a; Bureau of National Affairs, 1979). These are the firms most likely to need a steady flow of applicants for unskilled positions. Some parts of the retail trade and service sectors are particularly likely to make heavy use of the ES, such as restaurants, hospitals, hotels/motels, service stations, and other business/personal services (Department of Labor, 1978). Firms providing financial and professional services, on the other hand, make greater use of ads. Even controlling for both education and industry, firms filling higher-wage jobs are more likely to use employee referrals and less likely to use walk-ins or the ES (Holzer, 1987a), from which the information about the job applicant is considered less available and/or trustworthy.

Finally, we note that firms with Affirmative Action plans for the hiring and promotion of minorities and women are likely to rely more heavily on other recruiting mechanisms to achieve these goals. Managers consider newspaper ads "most effective" for the hiring of women and community agencies for the hiring of minorities (Bureau of National Affairs, 1979). Some firms also mention the ES as an effective means of obtaining minorities.[25]

In addition to these data on the use and effectiveness of hiring through different recruitment methods, there has been some evidence as well of the quality of the matches generated by these methods. Above we noted the apparently lower rates of turnover and absenteeism of those hired through friends and relatives, while the opposite appears to be true of those from the ES.

There is additional evidence on this issue from employer survey data on job performance and other characteristics of workers hired. In particular, the Employment Opportunity Pilot Project (EOPP) Survey of Employers in 1980 and 1982 asked employers to rate the performance of their worst recently hired employee on a 0 - to - 100 scale for several specified points in time.[26] Bishop et al., (1983) and Holzer (1987a) found somewhat higher performance ratings for those hired through employee referral. But, in addition, these employees are less likely to be young and/or female than are those hired through other means (Holzer, 1987a). These findings strongly suggest that recruiting mechanisms which are most cost-effective from the employer's point of view may entail disadvantages for specific groups of employees who many suffer from fewer "connections" or biased employer perceptions. Specific governmental efforts to aid these groups in the hiring process might therefore be justified on equity grounds.

We note, again, that evaluations of the ES (this time among employers) have not been uniformly negative. The Department of Labor (1976) study reports that the majority of ES users among employers are satisfied with the referrals received, while most non-users feel only that they do not need the ES. Most of the latter have, in fact, never used it. This indicates that low usage of the ES may not reflect negative perceptions so much as a more general belief that other methods of search are preferable, given their particular needs.

III. Conclusions and Policy Implications

The evidence discussed in the preceding pages shows that checking with friends and relatives is the most frequently used search method among job seekers, and also the one which generates the most accepted jobs. Direct applications without referral and newspaper ads are also used relatively frequently, while the Employment Service (ES) generates employment for just a small fraction of job seekers. More highly-skilled employers rely more heavily on ads and private agencies, while less-skilled employees and minorities use the ES more frequently. But even among the latter groups, only small fractions of all jobs found are accounted for by the ES.

Data from employer surveys confirm these findings. Referrals from current employees and direct walk-ins are the most frequently used recruitment methods, and they generate the most hires. Newspaper ads and private agencies are costlier for the firm but quite effective for jobs requiring specific skills, while direct walk-ins and the ES are more useful for large employers seeking a steady stream of applicants to fill unskilled positions. But, again, the ES accounts for a very small fraction of those hired.

There was other evidence of lower turnover, lower absenteeism, and higher performance ratings of employees hired through their friends and relatives. The opposite was frequently the case for those hired through the ES. There was also some very limited evidence of greater ES effectiveness in smaller and/or suburban offices than in larger urban ones.

These data clearly suggest that informal search methods are least costly and most effective for most employers and employees, and that private formal mechanisms (i.e., newspaper ads and agencies) work well for skilled workers and jobs. However, it is also clear that minorities, women, and perhaps the young are disadvantaged when using the informal mechanisms.

This suggests the need for policies designed to counteract the problems which these groups face in the search process. To date, the ES does not appear to be a very effective means of doing so. However, it is unclear from the evidence reviewed here whether this is due to the deficiencies of the ES or to the characteristics of those who choose to use it. Furthermore, it is difficult to know how the secular economic changes of the 1980s and 1990s (e.g., rising demand for skilled labor, shortages of workers in some sectors and areas due to economic growth and the "Baby Bust", etc.) will affect the potential or actual role of the ES. Also, it is unclear why state employment services in other OECD countries play so much greater roles in the labor market than they do in the U.S., handling roughly 20-40% of job vacancies and placements in many cases (Roper, 1986). Perhaps the greater tradition of private, decentralized labor markets in the U.S. (as well as a greater diversity in characteristics and needs of employees and employers) explains the relatively greater reliance on private networks and agencies here, though this is clearly speculative.

Given these uncertainties, it is difficult to endorse specific reforms in the ES with any degree of confidence (though others who have studied the institution in greater detail might do so). Proposed changes run the gamut from strengthening search requirements for UI recipients to eliminating them; or from tightening the screening process for referrals to expanding the services provided to the least skilled and employable registrants. Some experimental state programs have shown a potential role for general job search instruction for registrants and aptitude testing (with results provided to employers). But the low usage and success rates of the ES to date suggest that there may be limited scope for improvement, at least without dramatic and well-publicized changes.

Alternatively, others suggest eliminating the ES altogether and spending these resources in some other manner in the labor market. But if the ES is supplemented or even replaced by alternative policy mechanisms, these should benefit disadvantaged groups at least as much as does the ES currently. Given the overwhelming importance of informal job search in the U.S. labor market, as well as the problems which disadvantaged groups clearly show in this process, it is sensible that any efforts to aid these groups should focus on this process.

Unfortunately, the ability of government policy to influence private employer perceptions and employee networks is limited. But, a few possibilities do exist. One option might be to strengthen other public mechanisms, such as school placement offices, which are less stigmatized than is the ES (since they could service people with a broader range of skills) but which could direct more resources to the placements of the disadvantaged groups. Increasing the flow of information about local and national labor markets to these offices might be particularly useful.[27] Of course, such a mechanism would provide no benefits to those who are already non-enrolled. Special instruction on the informal job search process (e.g., the writing of resumes and applications, the seeking of referrals, the interview process, etc.) in schools and/or training programs might be useful as well for those who currently do not use this process effectively.[28]

TABLE 1

SEARCH METHOD USE AND EFFECTIVENESS FOR EMPLOYEES

Search Method Used	Overall Used	Hired	Percent Success
EMPLOYMENT SERVICE	27.6%	5.6%	20.3%
Private Agency	14.5	5.6	38.6
Employer direct	82.1	29.8	36.3
Looked at want ads	62.5	---	---
(Answered ads)	47.5	16.6	34.9
Labor unions	6.2	1.4	22.5
Friends/relatives	65.0	30.7	47.2
Business associates	33.1	3.3	9.9
Community organization	1.6	.35	21.9
School placement	10.9	3.0	27.5
Professional journal	6.4	---	---

Source: "Recruitment, Job Search, and the United States Employment Service." United States Department of Labor, 1976.

TABLE 2

SEARCH METHOD USE AND EFFECTIVENESS FOR EMPLOYERS

	Overall		Percent
Search Method Used	Used	Hired	Success
Employees	54%	32.5%	60.2%
Newspapers	45	29.6	65.8
Gate Hires	37	23	62.2
Applications	34	16	47.1
Business Associates	27.5	11.5	41.8
State ES	27	14	50.9
School Placement	15	7.6	50.7
Private Agency	12	9	60
Community/Welfare	8.2	2.3	28
Labor Unions	4.6	4.6	100
All Other	2.7	1.3	48.1

SOURCE: "Recruitment, Job Search, and the United States Employment Service." United States Department of Labor, 1976.

NOTES

1 See, for instance, Reynolds (1951) or Rees (1966).

2 The distinction between formal and informal mechanisms was stressed by Rees (1966). Others (e.g., Barron and Gilley (1981), Chirinko (1982)) have distinguished "self-directed" methods such as friends/relatives and newspaper ads from "indirect" ones (e.q., public and private employment agencies).

3 The United States Employment Service consists of some 2400 offices nationwide. Registration is generally free for unemployed workers, as is the listing of openings and receipt of referrals for employers.

4 See, for example, Reynolds (1951), Rees and Schultz (1970), or the U.S. Department of Labor (1976).

5 See Barron _et al._, (1985) for a discussion of "extensive" (i.e. many applicants with little screening) or "intensive" (i.e. few applicants and more screening) strategies and the use of applicant backlogs to fill specific vacancies.

6 Occasionally firms will offer bonuses to current employees who generate referrals. See Heneman _et al._, (1985).

7 See, for instance, Rees and Schultz (1970). A large literature also documents the fact that UI recipiency limits returns to employment while unemployed individuals remain eligible to receive it - see, for instance, Katz and Meyer (1987).

8 Rees and Schultz _op. cit._

9 See Heneman _et al._, (1985).

10 Other industries in which union referrals are important include trucking and longshoring.

11 While the Personnel/Human Resources literature has long recognized that firms might choose to pay high wages in order to lower the costs of hiring and training, this notion has only recently been formalized by economists in "Efficiency Wage" models. See Yellen (1984).

12 This discussion suggests that wage and training costs may be viewed either as "complements" or as "substitutes". While there may be some margin for substitution between them, the prospect of paying high wages for other reasons over long periods may or may not induce the employer to invest more heavily in such training.

13 For instance, questions on search methods used in the monthly household surveys of the Current Population Survey (CPS) are based only on a sample of currently employed workers. In contrast, questions in the National Longitudinal Survey (NLS) have been asked of all workers who report search in the previous month regardless of current employment status.

14 Among individuals who are currently unemployed, only rejected offers will be reported. According to Holzer (1988), these represent less than 20% of all offers made.

15 For instance, the NLS surveys focus only on youth or on older people, depending on the particular version. The Panel Study of Income Dynamics (PSID), on which the work of Corcoran et al., is based, is limited to heads of households and their spouses.

16 The survey, described in U.S. Department of Labor (1976), was administered to 2000 job seekers in medium-size American cities (i.e., between 100,000 and 250,000 in population). The survey covers job seeking activity during the last six months of 1974. An additional survey of 600 firms in these areas was also conducted and is discussed below.

17 Direct application to employer may not have specified "without referral", and thus might overlap with other methods. In this case the figure reported might represent an upper bound to the true effect.

18 Corcoran *et al.*, find that about half of all workers in their sample (of household heads and spouses) heard about their current job from friends and relatives, though this is not a representative sample of recent job seekers. Granovetter (1974) found the same thing among professional and managerial employees in Newton, Mass. Rees and Schultz (1970) found this to also be true of all blue-collar occupations which they studied in Chicago in the mid-1960s.

19 Breaugh, in particular, finds that the performance of those hired through referrals from current employees may depend on the morale among the earlier employees and the closeness of the jobs in question.

20 Barron and Gilley (1981) and Chirinko (1982) find that indirect methods (including the ES - see footnote 2) have negative (though not always significant) effects on the probability of contacting employers and receiving employment, relative to direct applications. Holzer (1988) find lower probabilities of obtaining offers from using any of the formal methods relative to informal ones.

21 Economists know these problems as those of self-selection and unobserved heterogeneity in estimation. There are statistical procedures for dealing with such problems, though their usefulness is often limited by the quality of available data. Actual labor market experiments involving random assignments of individuals to different groups can often be used more effectively to deal with these problems, though I know of none to date which have been performed on the issues of search method use and effectiveness.

22 In that survey, employers are asked which methods they used in the last 10 days (if they had a job opening) and which helped them to obtain their most recently hired worker. To the former question, 53% reported announcements to current employees; 37% used newspaper ads; 20% used the ES; and 22% used unions or private agencies. To the latter question, 36% reported friends/relatives of current employees; 19% reported walk-ins; 13% reported ads, and only 3% reported the ES.

23 The BNA sample consists of executives from 188 primarily large firms. Over 90% use employee referrals, over 80% use walk-ins and ads, 63% use the ES, and about 45% use private agencies. Rankings are based on subjective impressions of "effectiveness".

24 As noted above (Footnote 18), the sample of all recently hired employees is not the same as a random sample of firms with openings in a specified period.

25 33% of firms report community agencies as being "most effective" in recruiting minorities while 30% report referrals from current employees and 20% report employment agencies (public or private).

26 This estimation, in addition to having the sample "selection" problems noted above (See Footnote 21), also has the problem of comparing subjective ratings across employers for whom a particular number may mean different things. The relatively weak effects noted in Holzer (e.g., 1 to 2 points on a 100-point scale from using current employee referrals) must be interpreted with this in mind.

27 One way in which the effectiveness of placement services might further be enhanced might be for the U.S. government to collect vacancy data in surveys of employers within local labor markets, and to provide these data as information to placement offices. Vacancy data are generally collected in virtually all other OECD countries.

28 Job search instruction has been included in the job-training portions of many recent welfare reform programs at the state level (Gueron, 1986), though their specific effects have generally not been estimated.

REFERENCES

Barron, John _et al._, "Employer Search: The Interviewing and Hiring of New Employees." _Review of Economics and Statistics_, February 1985.

Barron, John and Otis Gilley. "Job Search and Vacancy Contacts: Note." _American Economic Review_, September 1981.

Bendick, Marc. _Building a Job Service For the Year 2000: Innovative State Practices_. Bendick and Egan Economic Consultants, 1989.

Bishop, John _et al._, "Recruiting Workers: How Recruitment Policies Affect the Flow of Applicants and the Quality of New Workers." Mimeo, 1983.

Bradshaw, Thomas. "Jobseeking Methods Used by Unemployed Workers." _Monthly Labor Review_, February 1973.

Breaugh, James. "Relationship Between Recruiting Sources and Performance, Absenteeism, and Work Attitudes." _Academy of Management Journal_, March 1981.

Bureau of National Affairs, Inc. _Recruiting Policies and Practices_, Personal Policy Forum No. 126, 1979.

Chirinko, Robert. "An Empirical Investigation of the Returns to Job Search." American Economic Review, June 1982.

Corcoran, Mary et al., "Information and Influence Networks in Labor Markets." in G. Duncan and J. Morgan eds. Five Thousand American Families: Patterns of Economic Progress, Vol. 7, Institute for Social Research, 1980.

Datcher, Linda. "The Import of Informal Networks on Quit Behavior." Review of Economics and Statistics, August 1983.

Fairchild, C.K. "Employment Service Placement Forecasts and Performance Standards." Report prepared for Employment and Training Administration, U.S. Department of Labor, 1983.

Granovetter, Mark. Getting a Job: A Study of Contacts and Careers. Harvard University Press, 1974.

Gueron, Judith. "Work Initiatives for Welfare Recipients." Manpower Development Research Corporation, 1986.

Heneman, Herbert et al., Personnel/Human Resources Management. Third Edition, Irwin, 1986.

Holzer, Harry J. "Hiring Procedures in the Firm: Their Economic Determinants and Consequences," in R. Block et al., eds. Human Resources and Firm Performance, Industrial Relations Research Association, 1987a.

Holzer, Harry J. "Informal Job Search and Black Youth Unemployment." American Economic Review, June 1987b.

Holzer, Harry J. "Search Method Use of Unemployed Youth." Journal of Labor Economics, January 1988.

Johnson, Terry et al., "An Evaluation of the Impact of ES Referrals on Applicant Earnings." Journal of Human Resources, Winter 1985.

Katz, Lawrence and Meyer, Bruce. "The Impact of the Potential Duration of Unemployment Benefits on Unemployment Duration." National Bureau of Economic Research Working Paper, 1988.

Rees, Albert. "Information Networks in Labor Markets." American Economic Review, May 1966.

Rees, Albert and George Schultz. Workers and Wages in a Urban Labor Market. University of Chicago Press, 1970.

Reid, Graham. "Job Search and the Effectiveness of Job-Finding Methods." Industrial and Labor Relations Review, April 1972.

Reynolds, Lloyd, The Structure of Labor Markets. Harper, 1951.

Roper, Stephen. "The Economics of Job Vacancies." Centre for Labour Economics, Discussion Paper No. 252, London School of Economics, 1986.

Rosenfeld, Carl. "Jobseeking Methods Used by American Workers." Monthly Labor Reviews, 1975.

Schwab, Donald. "Recounting and Organizational Participation," in K. Rowland and G. Ferris eds. Personnel Management. Allyn and Bacon, 1982.

Sheppard, Harold and A. Harvey Belitsky. The Job Hunt: Job-Seeking Behavior of Unemployed Workers in a Local Economy. W.E. Upjohn Institute, 1965.

Stevens, D.W. "Introduction, Summary, Recommendations." Measurement of USES Productivity: Assessments of Procedures Utilized to Date and on Agenda for Future Refinements. 1979.

Taylor, M. Susan and Donald Schmidt. "A Process-Oriented Investigation of Recruitment Source Effectiveness." Personnel Psychology, Summer 1983.

United States Department of Labor. Recruitment, Job Search, and the United States Employment Service. R&D Monographer 43, Employment and Training Administration, 1976.

United States Department of Labor. The Public Employment Service and Help-Wanted Ads. R&D Monograph 59, Employment and Training Administration, 1978.

Yellen, Janet "Efficiency Wage Models of Unemployment." American Economic Review, May 1984.

19. THE ROLE OF THE EMPLOYMENT SERVICE

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THE ROLE OF THE EMPLOYMENT SERVICE

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I. Introduction

Statutory authority to maintain a United States Employment Service (USES) is found in Title VI of The Job Training Partnership Act of 1982 (Public Law 97-300), as amended in 1988. The USES is part of the Employment and Training Administration in the Department of Labor. Fewer than forty USES employees oversee a federal budget of approximately $800 million, which supports some 25,000 State Employment Security Agency (SESA) employees and about 1,800 local offices.

An SESA is found in each of the fifty states, Guam, the Virgin Islands, the Commonwealth of Puerto Rico, and the District of Columbia. Two factors determine each state's share of appropriated funds allotted by the Secretary of Labor. Two-thirds of available funds are allotted on the basis of each state's relative share of the nation's civilian labor force, and one-third is allotted on the basis of each state's relative share of the number of unemployed individuals. Data for the most recent calendar year available, as determined by the Secretary, are used for this purpose.

Ninety percent of the funds each SESA receives may be used for designated services, such as counseling, testing, labor market information, referral to jobs, recruitment and special technical services on behalf of employers, administering tests of unemployment insurance claimants' availability for and willingness to accept employment, program evaluation, and development of ties with activities authorized in related federal or state legislation. Ten percent of the funds received must be reserved for each Governor to provide performance incentives, services for groups with special needs, and to cover the extra costs incurred in delivering services using exemplary models. The USES and the SESAs are authorized to provide other services under contract.

This paper examines the recent performance of the USES-SESAs system, and recommends a way to improve upon this record. Following a brief review of important milestones in the system's evolution, a conceptual framework is introduced to guide the examination of actual and potential contributions to the nation's competitiveness.

Three conclusions emerge in our discussion of these issues:

1) There are compelling public responsibilities that require an effective government partner in the provision of some employment services.
2) Developing demographic, production and budgetary forces have created an urgent need to redefine federal responsibilities.
3) The 1990s will challenge the USES to target very limited federal resources in ways that assure the SESAs offer reliable competency certification and efficient referral of candidates to jobs. This will be an essential governmental contribution to promote sustained economic growth in a competitive international context.

II. Historical Perspective

Figure 1 reveals the USES-SESAs system's institutional development. The important lesson to be learned here is that federal, state and local relationships have been repeatedly destabilized as Administrations and sessions of Congress redefine the federal agency's organizational turf.

Figure 2 offers a second valuable lesson--at the same time that institutional relationships have been subject to the recurring stresses, target group priorities and institutional missions have been revised. Currently, each SESA performs four basic functions:

1) testing, assessment, and referral of registrants to job openings listed with an SESA;
2) unemployment insurance benefit payments;
3) enforcement and compliance activities; and
4) labor market information activities, including research.

Many contradictions and inefficiencies lie hidden beneath the surface of this simple listing of missions. The following conceptual section shows how the turmoil described in figures 1 and 2 would be expected to affect the USES-SESAs system.

III. A Conceptual Framework

A distinction can be drawn between public sector *provision* of services, and the actual *production* of these services (Kolderie, 1986: 2-16). *Provision* refers to the establishment of policies, the statement of compliance standards to accompany these policies, financing, and

Figure 1

Chronology of the Public Employment Service in the United States

1830s First public support for labor exchange activities through municipal and state sources.

1907 A Division of Information is created in the Bureau of Immigration and Naturalization to inform immigrants about opportunities in different locations throughout the United States.

1917 The Secretary of Labor secures a Congressional appropriation to establish a national system of local offices suitable to meet War mobilization needs.

1933 The Wagner-Peyser Act becomes law, following previous Presidential vetoes in 1930 and 1932. This Act provides for federal-state matching to fund State Employment Security Agencies (SESAs).

A federally funded National Reemployment Service is created within the new U.S. Employment Service (USES) to make referrals to public works and work relief projects.

1935 A national Unemployment Insurance (UI) program is enacted as Title III of the Social Security Act. The SESAs are given administrative responsibility for assuring claimant compliance with continuing eligibility requirements. A federal tax on designated payrolls is authorized to cover administrative costs associated with UI responsibilities.

1939 Bureau of Employment Security formed to administer both UI and ES functions within the Federal Security Agency, under the authority of the Social Security Board.

1942 The SESAs are federalized as WW II begins. The USES is transferred to and becomes the operating arm of the War Manpower Commission.

1943 SESA administrators successfully lobby for Congressional assurance that federal-state partnerships will be reestablished at the War's end.

1945 The USES is transferred back to the Department of Labor (DOL) by Presidential Executive Order.

1948 In an appropriations bill, the Congress returns the USES to the Federal Security Agency under the Social Security Board.

1949 In a major reorganization of federal agencies, the Congress transfers both the USES and UI agencies to the DOL.

1962 Office of Manpower Automation and Training (OMAT) set up to administer Manpower Development Training Act (MDTA).

1963 Manpower Administration set up to take over operational responsibilities previously held by OMAT. OMAT left with research and development.

1964 The Economic Opportunity Act (EOA) creates Community Action Agencies, which become a federally funded direct competitor with the USES-SESA system.

1967 Realignment of Manpower Administration. Bureau of Employment Security (BES) retains USES-SESA operation.

1973 The Comprehensive Employment and Training Act (CETA) creates local Prime Sponsor entities, which also have complete discretion to use or bypass SESA services.

1975 Name of Manpower Administration changed to Employment and Training Administration (ETA).

1982 Title V of the Job Training Partnership Act (JTPA) amends the Wagner-Peyser Act of 1933 for the first time (see text for excerpts of key provisions).

1988 The Omnibus Trade and Competitiveness Act of 1988 creates a new Title V of the JTPA, so USES authority becomes Title VI.

Figure 2

Chronology of Public Employment Service Constituent Priorities in the United States

Prior to 1907	Local discretion.
1907-17	Dispersion of immigrants from ports-of-entry to inland locations.
1917-20	WW I mobilization and return to civilian economy.
1920-33	Local discretion.
1933-41	Referral to public works and work relief projects.
1942-45	WW II mobilization.
1946	Secretary of Labor publishes a directive in the *Federal Register* stating a six-point USES agenda, including "(1) services to specified target groups; (2) services to employers; and (3) services to community constituencies other than specified target groups and employers (e.g., the schools)."
1950s	Various directives from BES identify eight target groups who are to be accorded priority services: apprentices, ex-offenders, the handicapped, minorities, Native Americans, older workers, veterans, and youth.
1961	The Area Redevelopment Act requires the SESAs to participate in the identification of distressed *areas*.
1962	MDTA requires the SESAs to identify appropriate training opportunities for long-time labor force participants whose skills were no longer viable and who had been displaced.
1963	The Vocational Education Act broadens the SESAs' involvement in the identification of training opportunities in the U.S. economy.
1964	The Economic Opportunity Act (EOA) leads the DOL to establish Youth Opportunity Centers (YOCs) in many inner cities to serve minority economically disadvantaged youth. These YOCs become the primary recruitment and screening facilities for both the Job Corps and the Neighborhood Youth Corps authorized in the EOA.
1973	CETA permits, but does not require, SESA involvement in serving economically disadvantaged populations.
1982	The JTPA replaces CETA and continues to permit, but not require, SESA participation in serving economically disadvantaged populations.

associated regulations for the production of the services. *Production* encompasses only the actual delivery of the services. Continued federal provision for selected USES-SESA services is compatible with greater reliance on state and private sector production of these services. We assume here that the federal government's responsibility is to complement the actions of all other parties to achieve truly national goals.

Three functions of the USES-SESA system are examined here:

1) testing, assessment, and referral activities;

2) enforcement and compliance activities; and

3) labor market information and research activities.

The fourth function, UI benefit payments, is not treated.

It is useful, when examining federal and state responsibilities for these three types of service, to apply four of Kolderie's six elements on the merits of using market incentives in the production of any public service (Kolderie, 1986: 7-11).

(1) **Competition**. Competition generally reduces the cost of a service, unless there are economies of scale in the production of that service. Fee-charging personnel consultants are small (Stevens, 1984: 40) and local. In communities of 50,000 or more, competitive market characteristics are usually observed. Where there are economies of scale to be realized in the *production* of labor exchange services, then noncompetitive public services may be more efficient.

(2) **Creaming**. A frequent criticism of fee-charging personnel consultants (GAO, 1986: 18-19) is that they serve only the profitable clients, leaving the rest to the SESAs. The government can minimize creaming by either public or private agencies. This can be done by

offering subsidies to encourage service to a broader constituency, or by introducing selective taxes to discourage restricting service to a narrower range of clients.

(3) **Control**. Protection of the public's interests in labor exchange activities depends upon placing the producers of the required services at genuine risk if they fail to comply with established performance standards. Reliance on market forces alone will result in an underinvestment in search by both jobseekers and employers. Undue weight is given to ability to pay. Possible economies of scale are foregone. And social values regarding affirmative action eligibility are ignored.

The use of market forces lies at the heart of the options for change that are explored later. The goal is to assure that both public and private sector producers are placed at risk, if they accept funds provided through public auspices for specific labor exchange services, but they then fail to comply with the standards that have been set. Withdrawal of the government's commitment of funds is the ultimate threat.

(4) **Community**. Opponents of information sharing between public and private sector labor exchange intermediaries sometimes argue that the self-interest motives of fee-charging personnel consultants conflict with the public's interests. As long as government *provision* of appropriately defined labor exchange services is retained, this concern should be unfounded. Through proper use of the law, administrative regulations, and financial incentives, the public agent should be able to control the situation.

Distinct SESA Local Office Activities

These concepts--provision versus production, and competition, control and community--can be used to examine each of the three basic functions of a SESA (excluding UI benefit payment responsibilities).

Testing, Assessment and Referral

There is a compelling public interest in testing, assessment, and referral services, which justifies a commitment of public resources to their provision. Must the production of these labor exchange services also be a federal responsibility? No; for reasons that are introduced below.

Historically, a variety of sharing arrangements for provision and production of labor exchange functions have been exhibited in the United States (Adams, 1969; Haber and Kruger, 1964; ICESA, 1975; Johnson, 1973; Kolberg, 1976; Lubin, 1980; NCEP, 1978; Odell, 1969; OECD, 1984; Ruttenberg and Gutchess, 1970; Snelling [undated]; Stevens, 1984; Thal-Larsen, 1970; U.S. GPO, 1964a, b, and c, and 1976; Wegmann, 1983). The contribution of these studies is captured in one recent paragraph (OECD, 1984: 49):

> ...[I]n certain countries the Public Employment Service has a monopoly of formal placement operations; the activity of private placing agencies is considered undesirable or even abusive. In other countries, private agencies are allowed to function, but under surveillance and somewhat on sufferance; in yet others, the public service is in the position of having to defend itself against the charge of offering them unfair competition. *The rationale behind these differing attitudes seems to be the reflection less of*

> *economic considerations than of a particular philosophy of government, the concept of the role of the State.* [emphasis added]

With respect to testing, assessment, and referral activities in the United States, we conclude that there is a compelling federal responsibility to provide a threshold level of these services free of charge to all individuals who voluntarily avail themselves of the opportunity to use these services. The public interest reflects social values regarding uneven abilities to pay, affirmative action advocacy priorities, underinvestment by parties motivated solely by self-interest, and possible economies of scale in the provision of these services. In other words, both economic considerations and our interpretation of prevailing social values regarding government stewardship responsibilities in the United States support this conclusion.

The federal responsibility to provide limited testing, assessment, and referral services follows from a recognition that interstate and international competitive forces will surely limit state legislative appropriations in support of these vital public interests to a level below what is consistent with the social values expressed in the previous paragraph.

The federal interest, as a producer/buyer of testing, assessment, and referral services, is to increase productivity and earnings while reducing dependency upon federal benefits, and offering affirmative advocacy on behalf of designated individuals. Accountability for federal funds should be achieved through the definition and application of appropriate performance indicators.

It is imperative that each reader assess the merits of what follows independent of any beliefs about historical and current performance of labor exchange functions by the SESAs. Decisions about the future of the USES-SESAs system should not be based on historical or contemporary evidence about the labor exchange performance of a system that has never been asked or permitted to pursue an unencumbered community labor market information goal.

What would happen to such current SESA activities as validity generalization testing (a recent scoring innovation used with the General Aptitude Test Battery) or mass recruitment and screening activities on behalf of specific employers, if this proposed restriction of federal support for limited testing, assessment, and referral activities is adopted? Two approaches warrant consideration:

(1) These responsibilities could be devolved to the states, thereby forcing each to decide what the limits of government subsidy for these activities ought to be; or

(2) the federal government could contribute a limited amount of support to these activities, basing this willingness on the existence of a beneficial externality in the form of higher productivity and enhanced national competitiveness. This appears to be a weak argument at this time, because states are exhibiting an unprecedented willingness to subsidize private sector recruitment and training costs.

No mention has been made up to this point of a compelling federal interest in SESA *placements*. We have already identified the federal interest, as a buyer of public or private agent services, to be an increase in productivity and earnings, reduced dependency upon federal benefits, or provision of affirmative advocacy on behalf of designated individuals. Performance standards with respect to these outcomes are feasible. Routine ways to accomplish accountability already exist in the private sector, where fees are sometimes made contingent upon length of stay in a specific job, the compensation associated with that position, or the status of the individual who is placed.

The federal government could accept responsibility for establishment of "prices" for individual services that are only high enough to achieve the desired quality of performance. A combination of public and private sector vendors should offer sufficient competitive forces to accomplish this goal in most locations. If there are economies of scale to be realized through coordination and consolidation of federally funded human services programs, these economies should be revealed in the vendor bidding process, and through expressions of management intent to move in this direction by Private Industry Councils, Job Service Employer Committees, and State Job Training Coordinating Councils.

There should be no need to mandate coordination. The issuance of a federal price list for desired services should offer every potential public or private sector agent all the information it requires to determine whether it is in that agent's interests to bid for a performance-based contract. Interstate differences in the cost of achieving a uniform quality of service can be recognized in many ways now routinely practiced in other public- and private-sector activities.

Provision could be made for individuals who have been identified by the federal government as eligible for a federal job-seeking subsidy to receive this subsidy directly (e.g., in the form of a voucher). Similarly, employers could be offered direct access to this subsidy, without the involvement of either public or private agents. A small number of demonstration programs are underway to test different approaches to the use of market incentives to encourage UI claimants to return to work sooner. The procedures used in the Targeted Jobs Tax Credit program illustrate how an employer subsidy could be accomplished. The goal, in each of these instances, is to encourage *co-production* of job search; i.e., to capitalize on self-interest motives by encouraging all possible agents to seek their best advantage. *The essential safeguard, of course, is to define the public's interests with sufficient precision that creative abuses will not arise.* The adoption of earnings and longevity measures of performance will discourage "churning" abuses, for example.

Contract management is a costly activity. Federal resources would be required to manage the process described here. Many administrative details would have to be dealt with:

1) What is the appropriate geographical unit for contracting purposes?
2) Should a single franchisee be awarded a contract for a given territory for a specified period of time to secure the benefits of economies of scale, or should multiple vendors be supported to foster competition?
3) How often should new bids be solicited to assure that the benefits of competitive forces are realized?
4) What sanctions should be imposed for specific types of deficient performance?

It is possible that expensive investments would be made in setting up the administrative capability to manage the federal responsibility, only to discover that private sector vendors have a limited interest in serving the populations that warrant federal subsidy. This could occur if these agents fear a loss of identity with current employer clients. Two observations about this possibility are offered:

1) appropriate tests of the likelihood that this eventuality would arise could be conducted prior to an irreversible commitment to such an approach; and
2) self-interest motives can be depended upon to reveal the "right" price for serving *any* population deemed worthy of federal subsidy.

The federal government's track record in management of performance-based contracts is extremely uneven. Political forces sometimes distort the process. Insufficient attention to the management resources that are necessary to conduct performance oversight and audits can destroy the process. Substantial capacity building throughout the USES-SESAs system is going to be required no matter what mission assignment and organizational approach are adopted.

Enforcement and Compliance

The following conclusions about enforcement and compliance activities are warranted (Stevens, 1976: 185-201; Stevens, 1980: 51-62; Burgess and Kingston, 1982; Corson, Long, and Nicholson, 1985; Corson, Hershey, and Kerachsky, 1985):

1) There is not a national interest in testing compliance with continuing eligibility requirements for UI claimants because the laws governing these requirements are of state origin.

2) There is a national public interest in testing compliance with federally funded benefits (e.g., AFDC and food stamps).

3) Enforcement responsibilities on behalf of UI claimants and recipients of federal funds are among the justifications given for maintenance of SESA labor exchange activities, and for the commitment of Federal Unemployment Tax Act (FUTA) funds and of other federal revenues to support these activities.

4) There is compelling evidence that routine testing of individual availability and active search requirements through SESA auspices is extremely difficult to achieve (Burgess and Kingston, 1982; U.S. Department of Labor (ETA), 1988b).

5) These enforcement responsibilities clearly contribute to the limited effectiveness to date of many SESA local offices in achieving the public interests stated earlier. This is so for three reasons: resources are absorbed in other activities; staff awareness of applicant and employer motives is severely hampered; and the image of the public agent is stigmatized.

Based on these conclusions, separation of enforcement and compliance responsibilities from applicant/employer and labor market information services warrants renewed consideration. (The relative merits of UI and ES collocation and consolidated functional responsibilities have been debated for at least fifty years in the United States).

Labor Market Information

With respect to labor market information and research activities, it is concluded that there is a compelling federal responsibility because citizen well-being cannot be pursued in today's conditions of international competition without a federal commitment to understanding the dynamics of the nations' economy.

JTPA Title IV Part E--Labor Market Information defines a federal responsibility "to maintain a comprehensive system of labor market information on a national, regional, state, local, or other appropriate basis, which shall be made publicly available in a timely fashion."

To date, the federal government has accepted responsibility only for the definition and maintenance of limited databases called the Bureau of Labor Statistics (BLS) core statistical programs (including the Occupational Employment Statistics program, Local Area Unemployment Statistics program, the Permanent Mass Layoffs and Plant Closing program, the Business Establishment List program, and the Establishment Reporting program). These data series are produced by the SESAs under contract with the BLS. These core products are part of, but do not suffice as, a comprehensive system of labor market information that Congress has defined as a federal responsibility.

The federal government should accept responsibility for the definition and maintenance of a truly uniform limited database for state and local program planning, management and evaluation, and other consumer uses. The SESAs would be required to participate in this federally funded effort. States could then supplement this minimum uniform information, if the investment of state funds is determined to be in their public's interest.

It is important to remember that *no labor-exchange intermediary places anyone in a job* (Odell, 1976: 358-9; Carlson, 1986: 3). Every hiring transaction requires two willing parties--a job candidate and an employer. (Third-party approval is sometimes required; e.g., union membership, Senate confirmation, or board acceptance). The labor-exchange function per se is to provide information. Since information is costly, however, it is necessary to define limits for the amount and types of information that are thought to be a social responsibility.

The social responsibility for providing labor market information has been defined by a number of recent authors (Bendick, 1985: 7-13; OECD, 1984: 116-36). The following reasons have been offered for a public interest in the provision of labor market information:

1) Social values reject ability to pay as an acceptable criterion for access to such information.

2) Social values support affirmative action advocacy on behalf of selected populations.

3) More, or better, information increases the likelihood that the nation's human resources will be committed to their most productive uses.

4) Economies of scale exist in the collection and dissemination of information.

5) The actions of parties motivated solely by self-interest will result in an underinvestment in search by job seekers, employers and fee-charging labor-exchange agents.

Timely and accurate labor market information is the core of the labor exchange responsibility. There is a compelling national interest in the provision of timely and accurate labor market information. Economies of scale in the production of this information represent the single most important reason why a USES/SESA system is required.

UI coverage is now sufficiently pervasive in each state that the SESAs collectively represent a truly extraordinary network for collecting uniform information about the industrial and geographic dynamics of employment in the U.S. (Northeast-Midwest Institute, 1989).

Reasonable confidentiality restrictions on the use of data collected from employers in compliance with each state's UI statute offer sufficient reason to conclude that this information collection activity cannot be privatized.

Appropriate government access to information about the transactions of fee-charging personnel consultants could be required in the public interest, as a quid pro quo for vendor access to public funds. Fundamental public policy questions cannot be answered without such information. For example, do SESA job orders substantially duplicate private agent listings (GAO, 1986: 18)?

From What Should Be to What Is

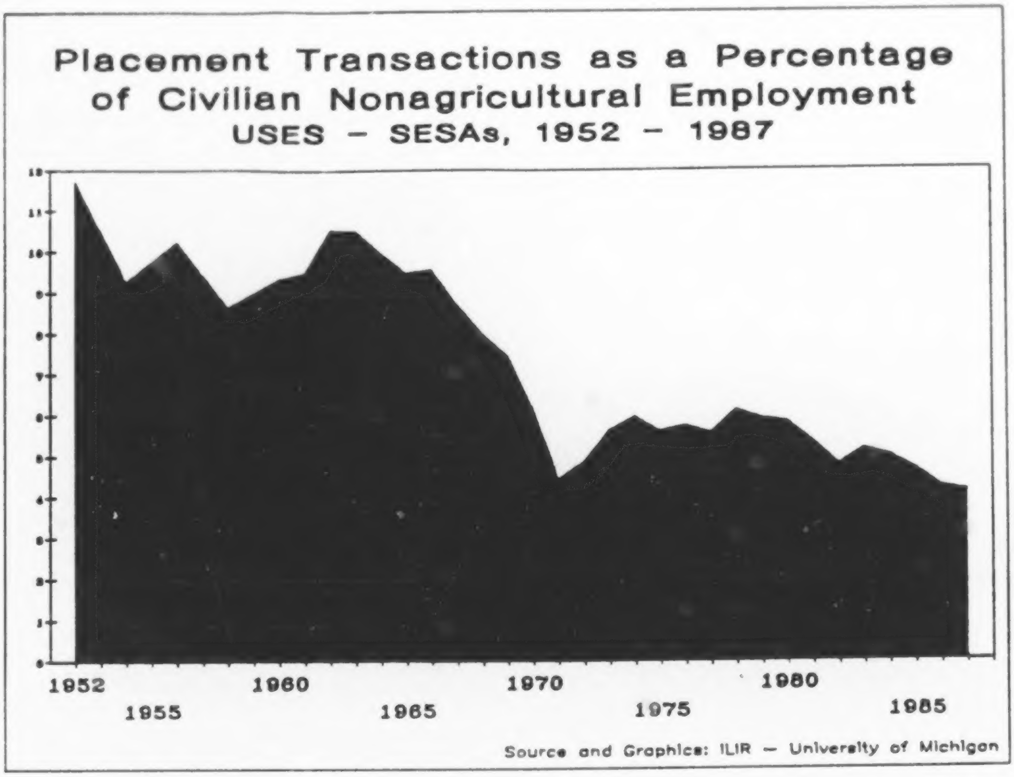
This conceptual section has established a case for federal government support of a uniform core of testing, assessment, and referral activities; a sharply limited responsibility for enforcement and compliance activities; and acceptance of an already mandated responsibility for labor market information activities that are in the nation's interest. Having presented this case, we turn next to the recent record of federal resource commitment and performance.

IV. Effectiveness of the Public Employment Service

Introduction

Despite a growing economy and labor force, the USES-SESAs system has over the last several decades become a less important institution, both in the placement of workers and in the generation of labor market information. The typical local office job listing is for an entry-level clerical or high-turnover blue-collar job. If the SESAs do an effective job of placing low-wage workers in jobs that they would not get on their own, this statistic might not be of concern. However, at the same time that placements have declined, the applicant pool continues to grow. In 1985 there were twice as many SESA applicants as in 1969. These statistics undoubtedly understate the growth in the number of applicants, since budget cutbacks have led many SESAs to discontinue counting applicants who do not receive service. Figure 3 presents historical data on SESA placements as a percentage of employment since 1952.[2]

Figure 3



As figure 3 illustrates, SESA placements as a percentage of civilian nonfarm employment have been declining in importance since 1952, from 12 percent of total civilian nonfarm employment in 1952 to 4 percent in 1987. The trend has been uneven. For example, by 1971, placements had declined to 4.4 percent, but then rose again until 1978, after which a continuous decline is seen. The 1960s witnessed the mission assignment to serve the economically disadvantaged. This population was difficult to serve even in good times, but was even more difficult during the 1970-71 recession.

A better measure of ES penetration is the ratio of placement transactions to new hires, which we estimate has declined from about 20 percent to about 7 percent over the last 25 years.

Contradictory Objectives Currently Imposed upon the Public Employment Service

Today, the USES-SESAs system is asked to respond to a myriad of sometimes contradictory goals:

1) The ES is asked to offer special service priorities on behalf of veterans, the handicapped, and the economically disadvantaged. This gives employers the impression that the ES is not free to refer the best candidate for a job opening in a timely manner.

2) The UI service unit, usually located in the ES local office building, may challenge UI claimant eligibility to receive UI benefits if they fail to comply with availability, active search, and willingness to accept a bona fide job offer provisions of the state's UI law. Thus, UI claimants may be afraid to use the ES because their failure to accept a job referral might jeopardize their UI benefits. Employers are cautious about hiring UI claimants, who might return to a previous employer if economic circumstances change.

3) The ES is asked to improve the assistance it provides to workers and job seekers, yet is cautioned not to compete with private employment agencies that provide similar services.

4) The ES is asked to cooperate with local vocational education and employment and training agencies, yet these same agencies often choose to offer similar services on their own.

5) The ES is asked to provide high-quality services for its constituents, yet the amount budgeted is unrelated to performance.

6) A major SESA function is to collect and disseminate labor market information, yet the collection of such data reduces the staff time available for servicing applicants.

7) The SESAs are asked to expeditiously process certifications of alien labor for employers who need workers, yet these certifications should not adversely impact the employment of American workers.

These contradictions, often-changing priorities, and cumulatively expanded responsibilities of the ES have been principal reasons for its mediocre performance.

The original purpose of the ES envisioned by its founders in 1933 was stated as follows:

> It shall be the province and duty of the bureau to promote and develop a national system of employment offices for men, women, and juniors who are legally qualified to engage in gainful occupations, including employment counseling and placement services for handicapped persons, to maintain a veterans' service to be devoted to securing employment for veterans, to maintain a farm placement service, and, in the manner hereinafter provided, to assist in establishing and maintaining systems of public employment offices in the several States and the political subdivisions thereof. . . . (Wagner-Peyser Act, Section 3(a), 1933)

Prior to the outpourings of federal legislation in the sixties, the staff of the ES was spending three-quarters of its time on placement functions, recruitment, interviewing, application taking, selection, referral, employer contacts, and order taking (Adams, 1969).

By 1976 the Job Service, as it was later called, was involved in the administration of twenty-five other laws, seventeen executive orders, and sixteen agreements with other federal agencies (U.S. Dept. of Labor, 1980:57).

There is extensive documentation to show that lack of focus is a major factor in explaining the mediocre performance of the ES. In a study of state employment security agencies conducted by the Urban Institute, high-performance agencies were characterized by "a clear and consistent sense of mission, with placement the primary objective" (U.S. Dept. of Labor (ETA), 1977:x).

In agencies where ES functions were combined with other functions, the results were disastrous, according to the same Urban Institute study:

> The result of creating a fully unified chain of command and a network of presumably integrated multi-service centers was institutional disaster for the ES. . . . To employers and job seekers alike the integrated offices seemed filled with public aid recipients, and the ES quickly became synonymous with welfare in the public mind . . . morale declined seriously (U.S. Dept. of Labor (ETA), 1979:77).

The lack of mission and focus of the ES is well known. Ross Morgan, administrator of the Oregon Employment Division and then president of the Interstate Conference of Employment Security Agencies

(ICESA), testified that there "are so many priorities that you can't possibly meet them all" (U.S. House of Representatives, 1976:178).

Ernest LaPalm, assistant commissioner of the Washington state SESA, estimated "we get clarification of that (ES) role on the average of once every 10 days" (U.S. House of Representatives, 1976:77).

The Performance and Cost of the Public Employment Service

Federally authorized positions in SESAs increased 85 percent from 1960 to 1966, peaked at 49,000 in 1978, and declined to about half that size today. The 1983 federal budget introduced the sharpest cuts in the last twenty-five years. The positions, individuals placed, and transactions for the ES from 1980 to 1983 according to the budget were cut more than 50 percent. Although these severe cuts were never made, they took their toll on agency morale. Actual outlays for the ES were flat during this period, which meant a cut in staff, because inflation increased. Individuals placed declined from 3.8 million in 1980 to 3.2 million by fiscal 1987.

Compounding the problem in the last ten years, the federal budget for training and employment, of which the public ES is one component, declined from $10.8 billion in 1978 to $6.9 billion estimated for fiscal 1988. This decline put a strain on the public ES, which had received funds from other Manpower programs. For example, in fiscal 1978, while the public ES received $670 million from federal obligations, it received another $422 million from CETA, WIN, food stamps, and other federal programs (U.S. Dept. of Labor, 1979:62). During that year, 30,000 positions were authorized from the $670 million, and another 19,000 were authorized from the $422 million.

A disturbing problem with ES vacancies is that "the largest volume of vacancies listed with the ES are for relatively poorly paid, entry level positions in domestic service jobs, clerical and high turnover blue collar jobs" (U.S. Dept. of Labor (ETA), 1986:32773).

How important has the public ES been as a method of finding jobs for unemployed workers, compared to techniques such as help-wanted advertising? In 1970, 30.2 percent of job seekers used the ES as a job search technique. This has dropped steadily to 21.1 percent in 1988. Help-wanted advertisements were used by only 23.4 percent of unemployed workers in 1970, but by 1988, 34.9 percent of the unemployed used help-wanted advertisements in job search. This number has increased steadily, while use of the public ES has declined steadily. As a percentage of methods used, use of private employment agencies was declining through 1983, but has increased every year since then (U.S. Dept. of Labor (BLS), 1988, 1989). Friends and relatives and contact of employers directly continued throughout to be the most prevalent job search method used.

In evaluating the public ES, it is difficult to measure from any readily available source the value added by the public ES. The average placement of the ES in 1984-85 was at a wage only slightly above the minimum wage and about half of the average wage. An argument made in support of the performance of the ES is that it serves economically disadvantaged people who require more services than job-ready applicants. In program year 1985, although only 10 percent of ES applicants were economically disadvantaged, 32 percent were minorities and 25 percent were under the age of 22 (U.S. Dept. of Labor (ETA), 1988a:16-17).

In the absence of the public ES, how would these jobs be filled? What is the cost of filling these jobs? Is the cost less than what is currently spent by the public ES? Can we justify spending $800 million, the outlay projected by USES for the ES by 1988, for this performance?

Benefits of an Effective Labor Exchange Intermediary

The benefits that an effective labor exchange intermediary can bring to the American economy are a stark contrast to the observed results. To illustrate some of these benefits, we will present a hypothetical cost/benefit model.

Unemployment in the United States has reached record low levels. Even at these low levels, however, 6.7 million people were unemployed on the average during 1988. Furthermore, 1.8 million additional people worked part-time even though they wanted full-time work, and 1.0 million people were not counted as unemployed. Those not counted did not look for work because they thought it was not available. More workers experience some unemployment during the course of a year than at a given point in time. For example, during 1985 when the unemployment rate averaged 7.2 percent, 16.7 percent of those who worked or looked for work experienced some unemployment.

The labor market is a dynamic institution; according to a study by Cohen (1985), an estimated 64,000,000 nonagricultural hiring transactions took place in 1985. As the labor market tightens, employers may not find the right workers to fill job vacancies and may thus risk lost profits due to lost opportunities.

A more efficient labor market exchange can reduce the time workers spend between jobs, match the right worker to the right job, and reduce risk to workers willing to move to areas of relative excess demand for labor. For example, if a more efficient job service reduced by 20 percent the time between jobs on each spell of unemployment during 1988, the average unemployment rate would be reduced by about 1 percent. If unemployment compensation were paid on half of this time, unemployment compensation would have been reduced by one billion dollars. Furthermore, assuming an average 20 percent marginal tax rate on an average hourly wage of $9.00, government tax revenues would increase by $3.6 billion and social benefits would approximate the total increase in wages, which would be approximately $18 billion. These calculations measure only direct effects and do not even consider multiplier effects which could double or triple the benefits.

If unemployment is high due to insufficiency of aggregate demand, reducing time between jobs would not result in as great a reduction in unemployment as when unemployment is low because employers would hire fewer workers, thus reducing the overall benefits of an employment exchange.

Other studies suggest that investments in better job matching can lead to enormous increases in productivity in the U.S. economy. Bendick, for example, suggests that an investment in testing applicants using tests such as the GATB and Compass "can assist the nation to capture some of the $20 million or more in productivity improvements estimated to be achievable through improved worker-job matches" (Bendick, 1989: 19). Johnson et al. (1985) found a benefit of $1.80 for each dollar spent by the ES on agency services. One could imagine the benefits which could be achieved by a model ES of the twenty-first century using leading technology to refer people to jobs. Compared to European countries with successful employment services, USES is grossly underfunded. The staff population ratio is 1:5600 in England; 1:1607 in Sweden; and 1:1250 in Germany; it is 1:11,047 in the United States (Carlson et al., 1986).

The purpose of this section has been to illustrate the importance of an effective, well-functioning ES. Even from the narrow cost-benefit perspective of reducing net federal spending, spending money on improving the labor exchange can have significant payoffs. Although the calculations presented here are merely illustrative, they do point out the benefits.

A well-functioning labor market can also be effective in increasing productivity of U.S. firms and hence improve our competitive advantage at a time when the U.S. trade position is rapidly deteriorating.

Data Available to Evaluate the ES

The data routinely collected to monitor the performance of the ES system is inadequate. The Employment Service Automated Records System (ESARS) was abolished in June of 1985 as a federal requirement. This action was taken to comply with the Paperwork Reduction Act, and it occurred when responsibility for the ES was decentralized.

Figure 4 presents a basic matrix of information any analyst would need to study the USES-SESAs system. These data items used to be collected in ESARS.

Figure 4

Employment Service Performance - Applicants

Program Year 1987

July 1, 1987 - June 30, 1988

	Total applicants	Referrals	Placements	Placements over 150 days	Average wages
Total	18,439,000	7,056,000	3,230,000	2,228,000	NA
Economically disadvantaged	3,627,100	NA	NA	NA	NA
Minority	NA	NA	NA	NA	NA
Under 22	NA	NA	NA	NA	NA
Female	8,152,897	NA	NA	NA	NA
Veterans	2,471,800	1,090,232	445,813	NA	NA
UI claimants	6,431,700	NA	NA	NA	NA

NA = Not Available

Source: U.S. Employment Service, Division of Planning and Operations, November

1988.

The number of NA's on the table illustrates the paucity of information available on a program costing taxpayers $800,000,000 per year.

The GAO is completing a study for PY 1986 which will provide a rich source of data on ES operations. Results and data from the GAO study were not available in time for inclusion here.

V. Future Options

Introduction

As we enter an era of emerging labor shortages, intermediaries that better match workers and jobs can make a critical difference to the competitiveness of American industry as well as provide workers with better jobs. In November 1988, seventy-five labor market areas had unemployment rates of 4 percent or lower.

A major argument for government involvement as a labor exchange intermediary is that certain workers (e.g., the economically disadvantaged, or beneficiaries of AFDC, food stamps, or UI) have difficulty finding jobs on their own without outside assistance. It may be cheaper for the government to subsidize their finding a job than to pay benefits. A moral hazard exists, however, in providing these services largely through the SESAs: if the SESAs become stigmatized as providers of workers with special employment problems, employers may be reluctant to use them, vastly reducing their effectiveness and potentially *increasing* the pool of people with special problems!

Another complication is that the USES-SESAs consists of fifty-four state agencies with some 1,800 local offices. They range in effectiveness from excellent to poor. They serve different labor markets with differing economic conditions and problems.

Policy Alternatives

Five options discussed here are:

1) maintain the status quo;
2) withdraw from public responsibility for labor-exchange services;

3) give up state control in the management of labor-exchange responsibilities (i.e., federalize);

4) abandon federal oversight of the management of labor-exchange functions (i.e., devolve to the states); or

5) adopt a "hybrid" approach that uses market incentives to achieve efficiencies akin to good business practices, but which retains public responsibility for defining appropriate system goals and performance standards.

Each of these approaches is examined in figure 5.

Total withdrawal from public responsibility is inconsistent with prevailing social values in the United States, for the reasons given in section III.

Devolution to the states may be attractive for budgetary reasons, but it too is inconsistent with majority public attitudes toward federal government stewardship. Selective devolution of specific activities is advocated (e.g., UI availability, active search for work, and willingness to accept a bona fide job offer requirements; mass recruitment on behalf of a single employer; and state-specific labor market information investments beyond the uniform core--not yet defined--already mandated by the Congress as a federal responsibility).

Maintenance of the status quo appears to be the least desirable alternative. The federal capacity to monitor SESA performance; to invest in staff competencies and equipment technologies that are consistent with today's challenges; to design ways to take advantage of positive aspects of self-interest motives while guarding against untoward effects; and to cooperate as a viable partner with other federal, state, local and private-sector activities that logically require SESA participation, has been compromised through short-sighted actions. Change is required.

Federalization is simply out of the question at this time. It is inconsistent with federal budget exigencies, policy decisions in complementary program areas (e.g., JTPA, AFDC and vocational education), and prevailing public attitudes toward government.

Figure 5

Advantages and Disadvantages of Alternative Future Approaches

Withdraw from Public Responsibility

Advantages:

- Reduced budgetary demands.
- Creates an environment in which substitute sources of service delivery can emerge/prosper.

Disadvantages:

- Those who cannot pay may not be able to obtain these services in some states.
- Jeopardizes opportunity to achieve economies of scale and positive externalities that flow from efficient labor market transactions.
- Terminates existing interdependencies between other public and private sector agencies and the USES-SESA system.
- Lost productivity from labor market intermediary.

Devolve to the SESAs

Advantages:

- Reduces federal expenditures.
- Promotes state attention to service priority rankings.

Disadvantages:

- Jeopardizes the pursuit of compelling *federal* responsibilities to constituents.
- Disrupts existing federal/state relationships.

Maintain the Status Quo

Advantages:

- Minimum disruption of current staff/facility/equipment commitments.
- No interference with established cooperative relationships with other public and private sector organizations.
- No change in constituent expectations of service quality and availability.

Maintain the Status Quo (cont'd.)

Disadvantages:

- Uneven performance with respect to compelling public responsibilities.
- Uneven staff qualifications to perform necessary functions.
- Limited external advocacy for continued support of the system in its present form.
- Continual deterioration of services possible.

Federalize

Advantages:

- Permits easier quality control of service delivery and compliance with compelling federal responsibilities.
- Promotes homogeneity of service delivery practices.

Disadvantages:

- Establishes monopoly status with attendant loss of competitive discipline.
- Jeopardizes local flexibility to respond to emerging priorities.
- Flies in the face of pressures to reduce federal expenditures.
- Inconsistent with trends in other employment and training programs.

A Modified "Market" Approach

Advantages:

- Combines a need for continued government oversight and funding to achieve compelling public responsibilities with a reliance on market incentives to promote efficiency.
- Places a greater burden on the public partners (federal, state, and local) to identify and carry out their appropriate responsibilities.
- Offers previously excluded parties an opportunity to bid for participation in delivery services.

Disadvantages:

- Jeopardizes established institutional relationships and personnel commitments.
- Risks unstable delivery of services, as sanctions are imposed on unacceptable vendors.

This leaves what we refer to as "a modified market approach"[3] to be developed in greater detail in the next section.

Modified Market Approach

1. Decentralization

Many other aspects of federal employment and training administration have already been decentralized. There is little likelihood that this trend will be reversed. We recommend allocating a substantial part of the current federal budget for the USES-SESAs system to states on a contingent block grant basis. States (i.e., governors) would be required to meet standards for performance in the use of these federal funds, but could use any mix of public and private sector providers. Core testing, assessment and referral, federal program enforcement and compliance, target group advocacy, and specified labor market information activities would be required. Since performance standards are already required for other employment and training activities, and since we recommend greater flexibility in mixing and matching grant funds, we think performance standards for ES activities are necessary for our proposal to work.

With the advent of welfare reform, yet another institution might be set up to duplicate labor exchange services unless the states are allowed to exercise adequate management control. By allowing states maximum flexibility to accomplish broad goals, the states can better minimize duplicate administrative structures. Several states have already taken steps to offer integrated public services. A cost of pursuing this approach is loss of the institutional stability that accompanies presumptive deliveror status.

2. *Competitive Grants for Innovative Practices*

We propose that an initially small but growing share of federal dollars be allocated on a competitive basis to states proposing innovative approaches or services of demonstrated effectiveness that meet federal goals. The key requirement here, of course, is to define "innovative approaches," "services of demonstrated effectiveness," and "federal goals." Equitable competition for the funds, systemic stability, and maintenance of administrative credibility all depend on a clear statement of purpose and performance measurement practices. This discretionary allocation is intended to serve as a carrot to increase the quality of existing programs. The USES can assure that twenty-first century federal stewardship is consistent with the supply and demand dynamics described in this paper. The National Assessment of Vocational Education has documented how difficult it is to administer federal funds that are intended for innovative and expanded purposes only. The will to manage must be matched by the creation of the necessary administrative capacity to provide the necessary leadership and oversight. For examples of innovations that are already being tried by individual SESAs, see Bendick (1989) and Tracy (1989).

Our view is that an increasing federal budget would be allocated to states that elect to offer quality public employment services. We believe that the social benefits to be derived from such an institution far outweigh the costs. If, on the other hand, few states qualify, the budget for the USES-SESAs system could be reduced.

3. *A National Center for Employment Service Training and Research*

The USES should retain an adequate percentage of the federal appropriation for staff capacity building and developing technologies which can be disseminated to the SESAs; for research and evaluation; and for achieving national economies of scale in developing labor market information (e.g., improving competency testing and validity instruments such as the GATB test, improving or supplanting the Dictionary of Occupational Titles, and various approaches to increase job listings and applicant referrals).

4. *Phase In Over Time*

Any proposal to allocate substantial federal funds on a contingent block grant basis to governors, accompanied by smaller shares to be allotted on a competitive basis to the states and retained at the federal level for training, research, development, and evaluation, should be phased in over, say, five years. For example, during the first year 95 percent of last year's budget might be allocated on a block grant basis, with 5 percent being retained for national activities and incentive allotments. This would give states time to adjust, and would permit a federal administrative capacity to be reestablished.

There is no apparent reason why the current USES should not be retained as the organizational foundation within which to build the necessary management capacity to deal with the governors, the SESAs and other interested parties. Similarly, the Interstate Conference of Employment Security Agencies (ICESA), which is no longer federally funded, is the obvious administrative entity to work with the USES and the National Governors' Association to create the necessary staff capabilities to manage the system that is envisaged.

5. *State Options*

Each governor would be free to select from among many models to design a preferred approach before contracting for the required federally mandated services. In most states, where the SESA enjoys a good reputation, governors can be expected to begin with the status quo. Other states may choose to experiment with the use of vouchers and tax credits immediately. Some states may emphasize the traditional listing of job openings and referral of individuals to jobs, while others emphasize testing, assessment, and greater reliance on individual use of more general labor market information. Some governors will combine JTPA-SESA and some welfare services. Only outcomes will be evaluated, not the auspices through which they are achieved.

Given the demonstrated difficulty of introducing JTPA and Carl Perkins Vocational Education Act directives that are consistent with alleged Congressional intent, combined with the contentious history of the USES' own introduction of a Balanced Placement Formula, followed by a more complex Resource Allocation Formula, why do we persist in proposing yet another performance-based approach to the allocation of federal funds? The answer is simple: there really isn't any practical alternative. Federal budget exigencies, combined with changes in related program authorizations and administrative approaches, considered in the context of expected international dynamics in the 1990s, require a renewed capacity to deliver the services that have been described in this paper.

If this isn't incentive enough, consider the fact that the member nations in the European Community are realigning their public employment services in anticipation of 1992.[4] Should we be doing anything less?

NOTES

1. Kolderie's other elements were corruption and costs.
2. Data were not strictly comparable due to differences in treatment of mass placements and other changes in measurement. However, data were adjusted by the authors for comparability.
3. Bob Sheets coined this term in other writing coauthored with David Stevens.
4. The authors are preparing a paper commissioned by the International Labour Organization as part of a multi-nation reexamination of public- and private-sector employment agency relationship. This paper is expected to be available in August 1989.

REFERENCES

Adams, Leonard P. *The Public Employment Service in Transition, 1933-1968*. Ithaca, New York: New York State School of Industrial and Labor Relations, Cornell University, 1969. (Citing a report by Robert Thomas.)

Bendick, Marc, Jr. *Matching Workers and Job Opportunities: What Role for the Federal-State Employment Service?* Washington, D.C.: Project on the Federal Social Role, November 1985.

Burgess, Paul, and Kingston, Jerry. *The Development of an Operational System for Detecting Unemployment Insurance Payment Errors Through Random Audits: The Results of Five Statewide Pilot Tests.* Washington, D.C.: U.S. Department of Labor, Employment and Training Administration, Unemployment Insurance Service, 1982.

Carlson, Burton L.; Konig, Johanna; and Reidi, Graham L. *Lessons from Europe--The Role of the Employment Security System.* Edited by Rae Young Bond. National Governors' Association, 1986.

Cohen, Malcolm S. "Deriving Labor Turnover Rates from Administrative Records." In *Record Linkage Techniques*. Washington, D.C.: U.S. Department of Treasury, Internal Revenue Service. December 1985.

Corson, Walt; Hershey, Alan; and Kerachsky, Stuart. *Application of the Unemployment Insurance System Work Test and Nonmonetary Eligibility Standards*. Unemployment Insurance Service Occasional Paper 85-3. Washington, D.C.: U.S. Department of Labor, Employment and Training Administration, 1985.

Corson, Walt; Long, David; and Nicholson, Walter. *Evaluation of the Charleston Claimant Placement and Work Test Demonstration.* Unemployment Insurance Service Occasional Paper 85-2. Washington, D.C.: U.S. Department of Labor, Employment and Training Administration, 1985.

Haber, William, and Daniel H. Kruger. *The Role of the United States Employment Service in a Changing Economy*, Studies in Employment and Unemployment. Kalamazoo: W. E. Upjohn Institute for Employment Research, February 1964.

Interstate Conference of Employment Security Agencies (ICESA). *Final Report: The Role of the Public Employment Service 1975-1985.* ICESA, 1975.

Johnson, Miriam. *Counterpoint: The Changing Employment Service.* Salt Lake City: Olympus Publishing Co., 1973.

Kolberg, William H. Testimony in Oversight Hearings on Comprehensive Employment and Training Act: Relationship Between Employment Services and Unemployment Program, pp. 5-123. Hearings before the House Committee on Education and Labor, June 16, 1976. Washington, D.C.: U.S. Government Printing Office, 1976.

Kolderie, Ted. *What Do We Mean by "Privatization"?* Contemporary Issues Series 19. St. Louis, Mo.: Center for the Study of American Business, Washington University, May 1986.

Lubin, Carol R. "The Employment Service Role in Unemployment Compensation." In *Unemployment Compensation: Studies and Research*, Vol. 3, pp. 869-906. National Commission on Unemployment Compensation, July 1980.

National Commission for Employment Policy. *Labor Market Intermediaries*. Special Report No. 2. March 1978.

Northeast-Midwest Institute. *The Feasibility of a National Wage Record Database--Four Working Papers*. Northeast-Midwest Institute, 1989.

Odell, Charles E. "The Future Challenge of State and Federal Employment Service." Paper presented to the 56th IAPES Annual Convention, Columbus, Ohio, June 25, 1969.

Organization for Economic Co-operation and Development. *The Public Employment Service in a Changing Labour Market*. Paris, France: Organization for Economic Co-operation and Development, 1984.

Pissarides, Christopher A. "Job Matchings with State Employment Agencies and Random Search." *Economic Journal* 89 (December 1979):818-33.

Ruttenberg, Stanley H., and Gutchess, Jocelyn. *The Federal-State Employment Service: A Critique*. Policy Studies in Employment and Welfare No. 5. Baltimore: Johns Hopkins Press, 1970.

Snelling, Robert O., Sr. Testimony before the Senate Subcommittee on Employment and Productivity, and the House Subcommittee on Employment Opportunities. Undated typed manuscript.

Stevens, David W. Testimony in Oversight Hearings on Comprehensive Employment and Training Act: Relationship Between Employment Services and Unemployment Program, pp. 185-201. Hearings before the House Committee on Education and Labor, June 16, 1976. Washington, D.C.: U.S. Government Printing Office, 1976.

__________. "The 'Work Test': Goals and Administrative Practices" In *Unemployment Compensation: Studies and Research*, Vol. 1, pp. 51-62. National Commission on Unemployment Compensation, July 1980.

__________. *Public- and Private-Employment Agency Roles in Providing Labor Market Information and Job Search Assistance: Past, Present and Future*. Washington, D.C.: U.S. Congress, Office of Technology Assessment, September 1984.

Thal-Larsen, Margaret (assisted by Gordon Cavana and John Dana). *Placement and Counseling in a Changing Labor Market: Public and Private Agencies and Schools*. Report of the San Francisco Bay Area Placement and Counseling Survey. Berkeley: Institute of Industrial Relations, University of California at Berkeley, August 1970.

U.S. Department of Labor. *Manpower Report of the President*. 1979.

U.S. Department of Labor. *Manpower Report of the President*. 1980.

U.S. Department of Labor, Bureau of Labor Statistics. *Labor Force Statistics Derived From the Current Population Survey, 1948-87*. Bulletin 2307. August 1988.

U.S. Department of Labor, Bureau of Labor Statistics. *Employment and Earnings*. January 1989.

U.S. Department of Labor, Employment and Training Administration. *The Employment Service and Institutional Analysis*. R&D Monograph 51. 1977.

U.S. Department of Labor, Employment and Training Administration. *Federal Register*, Part VI. Monday, September 15, 1986.

U.S. Department of Labor, Employment and Training Administration. *Training and Employment Report of the Secretary of Labor*. 1988.

U.S. Department of Labor, Employment and Training Administration. *Unemployment Insurance (UI) Claimants to Reemployment Services*. Unemployment Insurance Occasional Paper 88-4. 1988.

U.S. General Accounting Office. *ES Limited Efforts to Use Private Employment Agency Resources*. U.S. GAO, March 1986.

U.S. General Accounting Office, Detroit Regional Office. *Methodology Paper Review of the U.S. Employment Service Operations*. U.S. GAO, May 1988. Unpublished.

U.S. Government Printing Office. "The Labor Market Role of the State Employment Services." Senate Committee on Labor and Public Welfare, January 24, 1964.

__________. "Public Employment Service." Hearing before the Select Subcommittee on Labor of the House Committee on Education and Labor, July and August 1964.

__________. "The Role and Mission of the Federal-State Employment Service in the American Economy." Report prepared by the subcommittee staff to the Select Subcommittee on Labor of the House Committee on Education and Labor, December 1964.

__________. "Operation of the U.S. Employment Service." Hearings before a subcommittee of the House Committee on Government Operations, April and May 1976.

U.S. House of Representatives. "Operation of the U.S. Employment Service." Hearings before a subcommittee of the Committee on Government Operations. April 14, 19, 24, and 25, 1976.

U.S. President, *Employment and Training Report of the President*, 1979.

Wegmann, Robert G. *Reemployment Assistance for Laid-Off Workers*. Information Series No. 258. Columbus: ERIC Clearinghouse on Adult, Career, and Vocational Education, National Center for Research in Vocational Education, Ohio State University, 1983.

20. LABOR FORCE PARTICIPATION OF OLDER WORKERS

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The artful policymaker can anticipate tomorrow's crisis and develop plans to ameliorate it. Such plans may seem puzzling to those concerned with today's and yesterday's crises. No demographic phenomenon has provided a greater ongoing challenge to the policymaker's art than the aging of the post World War II babyboomers. In the 1950s they created a shortage of maternity beds and four bedroom housing in the suburbs. In the 1960s they forced a massive increase in public school facilities. In the 1970s and 1980s boomers sorely tested the economy's ability to create jobs for young adults.

This continuing shift in the age structure has been a leading cause of economic and social changes in American society over the past four decades. It is notable that these changes have lead to expansions as well as contractions of services. The trek to the suburban ranch homes of the 1950s is now matched by a return to the two and three bedroom condos in the central cities. Despite the echo effect of the babyboomers' own babies, maternity facilities are well below their peak years. School enrollment is down and belt tightening is seen throughout the education industry.

Such ebbs and flows in the product market have their counterpart in the labor market. Many policies developed in an era when job creation was the major labor market crisis must be reconsidered as the possibility of future labor shortages arise.

The possibility that the babyboomers' exit from the labor market of the 21st century will lead to such shortages motivated the Report of the Secretary of Labor entitled Older Worker Task Force: Key Policy Issues for the Future (January 1989). In our review paper, we will look at the changes in labor force participation of older workers over the last two decades and summarize the available evidence regarding the importance of economic and other factors in those decisions. In so doing we will argue that our current retirement system is not neutral with respect to work effort across life. Rather it has systematically encouraged workers to work full-time with a single firm until retirement age and then go into full-time retirement. Reforms of the system initiated in the 1970s and early 1980s are not likely to change this behavior dramatically unless employers also change their retirement plans.

I. Labor Supply at Older Ages

The recent decline in the labor force participation rates of older Americans is well known and well documented. Since some of the retirement incentives discussed below go into effect at particular ages, it is useful to look at trends for one-year age categories.

Table 1 shows that participation trends in the postwar period varied over time and across ages. The first great reduction in the work effort of older men occurred during the 1950s, as the coverage of the Social Security System expanded dramatically. The participation rates of men aged 65 and over fell by about a quarter while those of men aged 55, 60 and 63 remained about the same. Between 1960 and 1970 there were only modest declines for these older men. Labor force

Table 1: Male labor force participation rates by age, 1950 - 1986

Year/Age	55	60	63	65	68	70
1950	87.8	82.1	77.6	67.7	54.2	44.5
1960	89.9	83.2	75.7	53.6	39.4	33.2
1970	91.8	83.9	69.4	49.9	39.4	30.1
1972	90.7	82.1	66.5	45.2	33.8	27.1
1974	88.0	79.0	59.2	39.8	27.7	23.5
1976	87.1	75.5	55.7	36.6	26.7	22.4
1978	85.8	74.4	52.2	36.3	28.7	21.7
1980	84.9	74.0	52.3	35.2	24.1	21.3
1982	86.4	72.1	45.2	30.6	24.8	21.1
1984	84.3	70.2	48.2	30.4	21.3	18.8
1986	84.1	69.2	44.3	30.7	20.7	17.1

Source: Labor force participation rates for 1950 and 1960 are based on decennial U.S. census data. Thereafter, they are from unpublished Department of Labor statistics, based on annual Consumer Population Survey labor force participation questions.

participation of those aged 55 and 60 continued to increase slightly during this decade of strong economic growth. Men aged 62 to 64 were first eligible for Social Security benefits in 1961, and their labor force participation fell after that year by nearly 10 percent by 1970. Between 1970 and 1980 substantial reductions in labor force participation occurred at each age between 55 and 70. The rate of decline has been more modest since then.

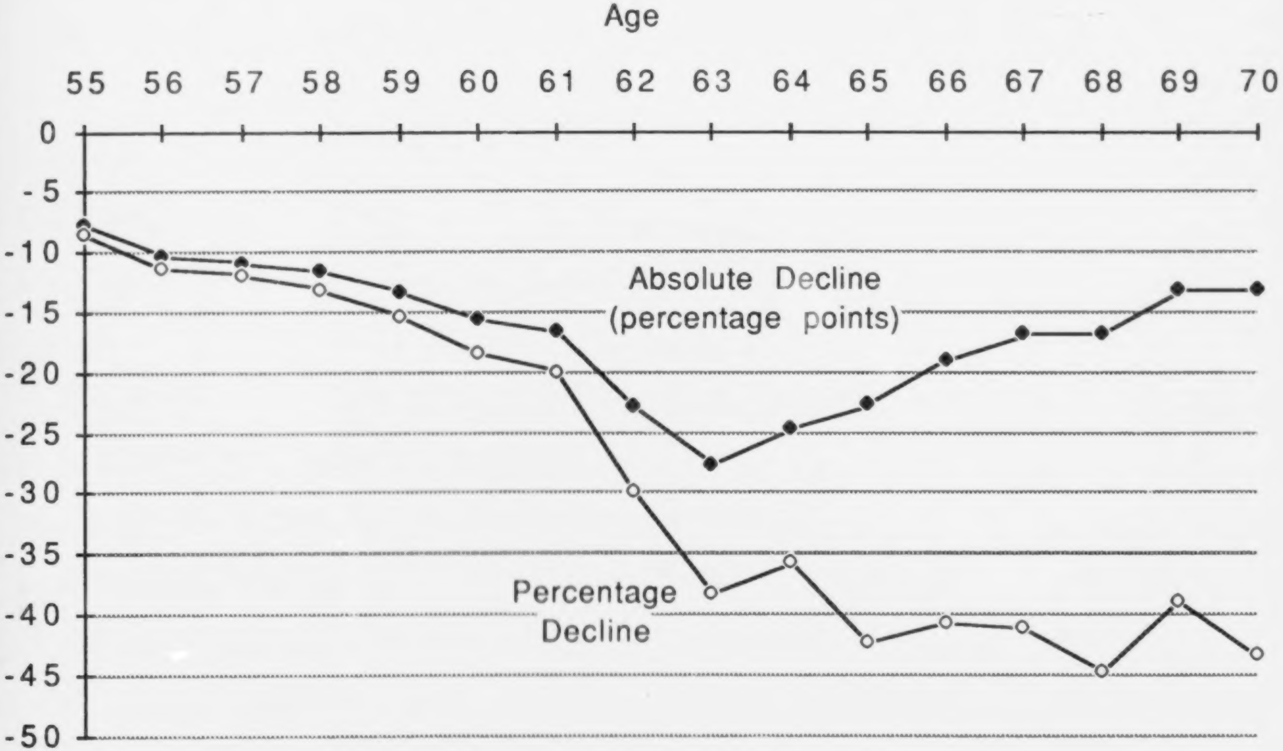
Figure 1 shows the dramatic changes in male participation rates by individual ages (55 to 70) between 1968 and 1986. Over these two decades, participation fell for every single age. In absolute terms, the declines are the largest between ages 62 and 65, the ages of eligibility for reduced and full social security retirement benefits. But the declines are substantial as early as age 55 and as late as 70. In proportional terms (as a percentage of the 1968 rate), the decreases continue to rise past age 65. For men 62 and older, participation rates have dropped by 30 to 45 percent over the past 20 years.

The trends for older women are much less dramatic. The 5-year cohort pictures over the past 2 decades are basically flat--the combined effects of increased participation by women and decreased participation by the elderly. For elderly women, they approximately cancel. Slight declines are observed for women 60 and older, and a small increase for those 55 to 59.

Further investigation reveals that the retreat from work at older ages is even greater than these participation statistics reveal. Fewer older Americans are working and, of the ones who are, fewer are

Figure 1

Decrease in Male Labor Force Participation Rates between 1968 and 1986, by Age (55 to 70)



Source: Burkhauser and Quinn (1989)

working full time. In 1988, nearly half of employed men and more than half of the employed women aged 65 and over were working part time (and the vast majority voluntarily), compared to about 6 percent of men and 23 percent of the women less than 65. The proportion of older Americans employed part time has been growing over time--from one-third to nearly one-half for men, and from 50 to 60 percent for women between 1968 and the present.

Finally, older workers are more likely to be self-employed than are members of any other age group. In 1986, one-quarter of all working men over 64 were self-employed, compared to less than 10 percent nationally. The self-employed are less likely to retire than are wage and salary workers, and many of the latter have turned to self-employment late in life (Quinn 1980, Fuchs 1982). Both Becker (1984) and Blau (1987) suggest that the number of self-employed is currently on the rise.

II. Determinants of the Retirement Decision

The labor supply of older Americans has declined dramatically over the past four decades. Work beyond age 65 was once common but is now rare. Circumstantial and econometric evidence suggest that our retirement income programs play an important role in this drama. Social security and employer pensions grew significantly over this same period and the financial incentives imbedded in these plans discourage work late in life.

Since its inception in 1935, the social security program has expanded coverage (which is now nearly universal), relaxed eligibility rules and provided large increases in real benefits. Ycas and Grad

(1987) estimate that by 1984 over 90 percent of all aged couples and single persons received social security benefits, and that this one source provided almost 40 percent of their aggregate income. Since 1950, real social security expenditures in 1987 dollars (excluding Medicare) have grown from $5 to over $200 billion per year, from 2 to 20 percent of all Federal spending, and from negligible to almost 5 percent of GNP (Quinn, Burkhauser and Myers, 1989).

Over the postwar period, employer pensions have grown as well. Kotlikoff and Smith (1983, Table 4.1.1) report that the number of private pension plans in America rose from 14,000 to over 600,000 between 1950 and 1980. Turner and Beller (1989, Table 1.3) estimate that there were 870,000 plans in 1987, covering 42 million workers, 16 million of whom were covered by 2 or more plans. Pension coverage increased from a quarter to a half among private sector wage and salary workers, and from 60 to 90 percent among state and local government workers (Kotlikoff and Smith, _op. cit_., Tables 3.1.2 and 3.1.3; Turner and Beller, _op. cit_., Table 13.2). The growth of social security and pension plans and the declining labor supply of the aged could be related for at least two reasons. Burkhauser and Warlick (1981), Moffitt (1984) and Boskin, Kotlikoff, Puffert and Shoven (1987) have shown that retiring cohorts up to now have received aggregate social security benefits that far exceeded the present value of the contributions made by them and their employers. These intergenerational transfers of wealth may have financed earlier retirement. But, in addition, social security and pension plans alter the lifetime pattern of compensation for many workers, subsidizing work at some ages and penalizing it at others. We argue that these wage changes may have induced early retirement for many workers.

A. Economic Incentives

There is growing evidence that the financial incentives inherent in our social security and employer pension plans are important determinants of work across an individual's life. Social security and pension plans not only affect work decisions at older ages but may also influence behavior at younger ages as well.

A one-period framework is inappropriate for understanding retirement incentives. Social security and employer pensions are multi-period in nature. Contributions are made during the work life and a stream of benefits is repaid later. The two are usually connected, although the association can be very loose. Current work decisions alter future benefit streams. Social security benefits depend on one's average monthly earnings, which change with continued work. Employer pension plans are many and varied. Defined benefit pensions, which provide primary coverage for most covered workers, are usually based on some combination of years of service and average salary, often over the last few years.

Since retirement income rights are entitlements to future income, they are best described by the present discounted value of the expected stream--their asset or wealth equivalent. This depends on the size of the future benefits, when they are claimed, the life expectancy of the individual (and spouse, in some cases) and the discount rate. When viewed this way, these rights have positive value even before one is eligible to receive them.

Prior to eligibility, an additional year of work usually increases future benefits and therefore the asset value of pension rights. This increase in pension wealth (called pension "accrual") is really part of compensation--the reward for working another year.

Ippolito (1987) and Kotlikoff and Wise (1985) show that the method by which most defined benefit accrual is calculated leads to substantial losses in pension wealth if a worker leaves full-time employment with a firm before the age of pension eligibility since accrual rises over a worker's tenure with the firm. Allen, Clark, and McDermed (1987) provide empirical evidence supporting this view. After eligibility, however, if one stays on the job accrual is likely to fall and may become negative.

An employee eligible for benefits who is considering working another year is really choosing between two retirement income streams, one starting today and another beginning in a year but with higher annual benefits. If the asset value of the second stream is larger, the employee receives a paycheck plus the wealth accrual for working that year. Total compensation exceeds traditionally defined earnings. But if the second (delayed) stream is smaller in present value, true compensation is less than the paycheck by the amount of the wealth loss. Recent research suggests that the latter is the case for many older workers. They suffer pay cuts if they stay on the job too long, not directly via the paycheck, but more subtly, through the details of their retirement income plans.

Burkhauser (1979) found that the value of the pension stream for a sample of UAW workers fell by more than half between the ages of early and normal retirement. We have used a large sample of older men from the Retirement History Study (Irelan (1973)) to estimate the size and the effect of the incentives imbedded in social security and in employer pension schemes (Burkhauser and Quinn, 1983a,b; Quinn and Burkhauser, 1983). Social security benefits grow with additional years of work for two reasons. Average indexed monthly earnings (AIME) rise which in turn increase the annual retirement benefit. In addition, those who claim benefits before age 65 suffer a permanent actuarial reduction of 6 2/3 percent for each year of early receipt--a maximum reduction of 20 percent for those who start benefits at age 62. Viewed from the other end--age 62--there is an actuarial reward of 8.33 percent (6.67/0.8) for each year receipt is delayed, in addition to the benefit recalculation via the AIME. At age 65, this delayed retirement credit drops to 3 percent per year of delay. The price paid for higher benefits in the future is a year without benefits in the present. Social security wealth may rise or fall, depending on the asset value of the two streams.

We found that for the median full-time worker in 1973, social security wealth rose slightly with continued work at ages 63 and 64. But at age 65, because of the drop in the delayed retirement credit, social security wealth decreased sharply for those who worked to age 66. The median wealth loss was about a third of annual pay--a significant pay cut indeed. The pension story was similar, although the estimates were less reliable because the pension data were much more limited.

Fields and Mitchell (1984a,b,c) examined the details of 14 specific pension plans and estimated the incentives facing workers at each age between 60 and 68. They found that the asset value of pension rights tended to rise and then fall, peaking between ages 60 and 65. With samples of men from one of their pension plans and from the Retirement History Study (RHS), they calculated total lifetime income (from age 60 on) for each retirement age between 60 and 68. This is the sum of the present values of earnings, social security and pension benefits. The total rises with each year of additional work, since earnings exceed retirement benefits. But the increase in the total (the true compensation for the additional year of work) falls monotonically, and at age 68 is less than 40 percent of what it was at age 60. This is the declining compensation profile facing older Americans.

Rhine (1984) surveyed executives of 363 companies, and found that nearly two-thirds of the firms had attractive early retirement provisions--either unreduced pension benefits, usually at age 62, for employers who met age and service requirements, or less than actuarial reductions, usually at age 55. These all encourage early retirement. One-third had also made "open window" offers--additional financial incentives for older workers to leave available to them over short periods of time.

Finally, Kotlikoff and Wise (1987b) studied the accrual patterns of over 2,000 plans and found a wide variety of incentives. Their accrual rate is the annual change in pension wealth divided by wage earnings for that year. Positive accrual rates describe a wage supplement, and negative ones a wage cut. They find considerable evidence of the latter.

It is now generally agreed that retirement income rights are best viewed as assets whose values depend on when they are claimed. Changes in these asset values with continued work are part of compensation and wealth losses are equivalent to pay cuts. At some age--certainly by 65 but often much earlier--these retirement plans provide strong incentives to retire. Do workers respond to these inducements by leaving the job and perhaps the labor force as well?

Considerable research suggests that people behave as though they understand and respond to these incentives. Burkhauser (1979) showed that auto workers were more likely to accept pension benefits and leave the firm the larger the pension wealth loss associated with continued work. Rhine (1984) found that "employees in companies that provide attractive early-retirement benefits tend to retire earlier than those in companies without such incentives." With a much larger and more representative sample from the RHS, we found the same effect for both social security and pension wealth changes. In fact, we concluded that much of what looked like a mandatory retirement effect at age 65 was really due to the financial incentives that occurred at the same time (Burkhauser and Quinn, 1983b).

Burtless and Moffitt (1984, 1985) confirmed that the social security system influences retirement behavior. They defined retirement as a discontinuous drop in hours of work, and found dramatic clustering of retirement around ages 62 (the earliest age of eligibility) and 65 (when the delayed retirement credit drops). They also showed that retirees who continued to work reported earnings clustered around the amount that social security permitted without loss of benefits. More than a third earned between 80 and 110 percent of the "exempt amount," and many more were below than above (Burtless and Moffitt, 1985).

Sickles and Taubman (1986), also using the RHS, combined earnings and the change in social security wealth into one variable and found that "the gain from postponing retirement (was) the most significant of the income variables." With a different methodology and data set, Mitchell and Fields (1984) concluded that "individuals who have more to gain by postponing retirement do in fact retire later." Kotlikoff and Wise (1987a) studied the employees of one particular firm and showed that "inducements in the (pension) plan provisions to retire early have had a very substantial effect on the departure rates from the firm." In summary, modern research has established that financial incentives do influence retirement behavior.

B. Health

Financial incentives are important determinants of the decision to retire but they are certainly not the only determinants. Individual decisions are extremely complex and depend on a vast number of factors, only some of which researchers can observe and measure. Physical and mental health, social networks, attitudes toward work and leisure, living arrangements, job characteristics, local labor market conditions, climate and expectations about the future are all undoubtedly important. They interact with the financial incentives on which economists have focused to bring about the final result.

In empirical work, poor health is almost always associated with earlier retirement (see Sammartino, 1987, for a review of the recent literature on health and retirement). The effects are large and significant, and generally more so for early (prior to age 65) and very early (prior to 62) retirees (Parnes, 1988). Exact comparisons between studies are impossible because of the variety of definitions of retirement and health. Many researchers are skeptical about the usefulness of subjective health evaluations, especially when given as a reason for retirement or as part of an application for health-related benefits (Johnson, 1977; Myers, 1982; Parsons, 1982; Bazzoli, 1985; Parnes and Less, 1985; Baily, 1987). One fear is that health may be viewed as a socially legitimate reason for stopping work and be mentioned even when it is not the primary reason. Quinn (1977) found that among RHS respondents who claimed that they had no health limitations and health better than that of their peers, 10 percent still claimed health as the primary motivation for retirement. On the other hand, Sammartino (1987) and Burtless (1987) argue that self-evaluated health may be a superior measure because it includes information about the quality of health required on the individual's actual job. No one denies that health is, was, and always will be an important factor. The debate concerns its measurement and the precise nature of its effect.

Some recent studies have focused on health measures other than self-defined status at retirement. Parsons (1982), Kingson (1982), and Anderson and Burkhauser (1985) utilized subsequent mortality. Bazzoli (1985) and Parnes and Less (1985) used self-reported health, but from a survey wave prior to retirement, and Chirikos and Nestel (1981) and Bazzoli (1985) created indices of impairments. Butler, Burkhauser, Mitchell and Pincus (1987) compared self reports on a specific condition--arthritis--with a clinical measure. Burtless (1987) compared three subjective measures with subsequent mortality and found them highly correlated.

These studies suggest that the use of self-defined health status at retirement exaggerates the importance of health in the retirement decision (though it remains important under any definition), and may muffle the measured effect of economic factors such as social security (Parsons, 1982), wages (Anderson and Burkhauser, 1985) and pension entitlement (Burtless, 1987). There is no general consensus on what the best measure is. What is known is that health is still a key determinant, despite recent emphasis on financial incentives, and that the magnitude of the estimated effect depends on the measure chosen.

Sickles and Taubman (1986) and Butler, Anderson and Burkhauser (1989) have proposed models in which health is endogenous. Since medical care depends on income, the financial variables in these models have two effects on the retirement decision--a direct one as in all modern models and also an indirect one via the impacts on health status.

One reason for the interest in health and retirement is the recent improvement in the life expectancy of the elderly. This suggests to some that workers may be able to work more years then than they do now and has been used as partial justification for the legislated increase in the age of eligibility for full social security benefits to 67. But recent reviews by Chapman, LaPlante and Wilenski (1986) and by Ycas (1987) have cast some doubt on the popular presumption that life expectancy and health status go hand in hand. The trends on longevity are clear--older Americans are living longer now than they did two decades ago. The increases in life expectancy at ages 60 or 65 are well documented (see Chapman et. al., op. cit., pp. 27-28) and are significant for males and females and for whites and non-whites. What is surprising is that they do not seem to be accompanied by increases in average health status. Chapman et. al., reporting on a variety of studies and data sources, concluded that morbidity and the prevalence of disability have actually increased. Ycas used a number of measures of health status and found that they produced very similar patterns over time, which suggest increasing health problems at least through the late 1970s and perhaps a leveling off or reversal during the 1980s. One explanation of the declining health is the "failure of success"--that medical advances keep people alive today who would have died in the past (Berkowitz, 1988). The additional years may be ones of chronic illness, not good health. Regardless of the explanation, poor health remains a serious problem among the elderly and the impact of health on the retirement decision will be as important in the future as it is now.

C. Labor Market Obstacles

According to Jondrow, Brechling and Marcus (1987), many workers would like to retire gradually. In one survey, 80 percent of respondents over age 55 preferred part-time work to complete retirement. In another, 60 percent of a sample of managers preferred phased retire-ment. Two-thirds of another group said they would consider a transitional step of part-time employment. Most of these would have liked part-time work with their full-time employer. Despite these preferences, the modal pattern of retirement still involves an abrupt transition from full-time work to complete labor force withdrawal. Most wage and salary workers who are able to reduce hours must switch jobs to do so. Why do desires and opportunities not match?

One reason is that part-time wage rates are much lower than full-time compensation. According to Gustman and Steinmeier (1985a), older workers in the RHS who reported themselves partially retired suffered an hourly wage loss of 10 percent if they remained with their previous full-time employer and 30 percent if they did not. Quinn, Burkhauser and Myers (1989), using the same data set but a retirement definition based on hours of work, report similar findings--severe wage losses associated with movement to part-time work, especially if accompanied by a change in employer.

Why don't workers reduce hours on their career jobs? According to Gustman and Steinmeier (1983, 1985a), they do not because they cannot. Only 15 percent of firms responding to a 1979 survey permitted some employees to reduce hours as they approached retirement. Only 7 percent offered this option to all employees. A survey of individuals suggested that two-thirds to three-quarters of older wage and salary workers were unable to work fewer hours. Rhine

(1984) reported that only 3 percent of a sample of over 350 large firms permitted phased retirement. The self-employed, on the other hand, who do have considerable control over their hours, are much more likely to utilize a transitional period of partial retirement.

But even if workers were permitted to work part-time on their career jobs, they would do so for reduced compensation. Social security and most defined benefit plans offer declining and at some point negative wealth accruals to workers who stay on the job. Many older workers, then, face unattractive alternatives as they age. Continued full-time employment on a career job eventually results in significant losses of retirement income wealth; in essence, a pay cut. Part-time work on this job is rarely available for the wage and salary population, and even if it is, it also may result in reduced retirement income wealth. New part-time (and to a lesser extent, new full time) employment means a significantly lower wage rate. Faced with these alternatives, many older Americans stop working. Is the decision voluntary? Yes, in the sense that they choose to do it under the circumstances. But no, in that the circumstances may have changed dramatically as they aged.

III. Patterns of Withdrawal from the Labor Force

Most recent research has focused on the theoretical formulation of the retirement decision and on the specification of the explanatory variables, particularly the financial incentives. Much less attention has been paid to the left-hand side of the equation--the behavior being explained. Retirement has generally been modeled as dichotomous and irreversible. Recent work suggests that for many Americans, actual withdrawal patterns are far more varied than the simple views that have dominated the literature.

A. The Extent of Partial Retirement

Partial retirement is actually a common phenomenon in the United States. With the initial wave of the RHS, Quinn (1980, 1981) found that 5 percent of wage and salary workers (aged 58-63) and 12 percent of the self-employed described themselves as partially retired in 1969. Fuchs (1982) showed that many of the self-employed have turned to self-employment late in their careers (after age 58) and that they are more likely to work reduced weekly hours than are salaried employees. Data on annual labor supply confirm that the self-employed have a much wider distribution of hours. The distribution of wage and salary workers is dominated by the mode around 2,000 hours, while the self-employed are more evenly spread around it (Quinn, 1981).

Honig (1985) and Honig and Hanoch (1985) classified as partly retired anyone earning less than 50 percent of their maximum annual earnings. With this definition, they found that from 14 to 27 percent of white married wage earning men aged 58 to 67 became partly retired between 1969 and 1973. Honig and Reimers (1987) analyzed monthly earnings, raised the definition of partial retirement to less than 80 percent of maximum (monthly) earnings and, of course, found even more of it. Although this definition may be overly broad, they are correct to conclude that retirement in the United States is a much more complex phenomenon than the "either-or" framework implies.

Gustman and Steinmeier (1984a,b, 1985a), using four waves of the RHS (1969-75), found that the proportion of wage and salary workers (aged 58-69) who call themselves partially retired rises with age and that about a third of the sample was partially retired at some time during that period. They also showed that partial retirement usually involves a job change and a pay cut, which led them to conclude that most career jobs have minimum hours constraints. All this work illustrates that studies dichotomizing older workers as either "retired" or "not retired" obscures partial retirement as an important avenue of labor force withdrawal.

B. Exit Patterns from Career Jobs

Quinn, Burkhauser and Myers (1989) have used the full 10 years of the RHS to analyze patterns of disengagement from career jobs, defined as full-time jobs held at least 10 years. They show, as did Hall (1982) and Addison and Castro (1987), that most Americans spend considerable time on a single job. This pattern of long tenure on a "career" job is consistent with the view that defined pension plans substantially penalize those who leave a career job "early." The transition from this job is an important event. Many leave this career job and the labor force simultaneously, but many do not.

Over a quarter of the wage and salary employees in the Quinn, Burkhauser and Myers sample did not stop work when they left full-time career employment. Of those who remained employed, most took on a new position quickly and stayed at it for at least two years. The new positions often represented a new line of work, lower down the socio-economic scale, often at considerably lower pay. Many workers, of course, were augmenting these earnings with social security and/or pension checks.

Although people of all types utilized these intermediate steps toward retirement, those at the extreme ends of the economic scale were most likely to do so. We suspect that the poor continue to work because they have to and because they do not face dramatic age-specific changes in their net pay since they are not likely to be eligible for pension benefits. The wealthy work because their employment provides more than a paycheck and also because they also are probably less affected by social security and pensions than are middle-class workers.

Iams (1987) reported similar findings with a recent sample of new social security retired-worker beneficiaries. Between a fifth and a quarter were still working 18-30 months after initial receipt of benefits. Most were working part time, usually by reducing hours per week. The median wage of those who switched employers was about half of that on their longest job or latest job, and many earned under the social security earnings test threshold.

Ruhm (1988a,b) has argued that the "job-stopping" process with which older workers leave the labor force is similar to the "job-shopping" process with which they enter. Between these periods, which are often characterized by multiple job holdings and part-time work, the typical worker has a career job for a significant number of years.

Ruhm defines the career job as the longest job held, regardless of when that was or how long it lasted. He finds that fewer than half of the RHS sample retired directly from a career employment. Most held at least one "bridge" job before exiting the labor market. Given the definition of career, Ruhm finds a wide distribution of years on post-career jobs; many in fact are really second careers. He finds that three-quarters of his sample changes industry or occupation between career and bridge jobs, and almost half changed both.

What this research suggests is that work after "retirement" is not a rare event. But substantial changes are required in both current social security and pension legislation before middle-class workers are likely to stay at work past their early 60s.

IV. Recent Changes in the Institutional Environment

The institutional environment surrounding retirement is itself changing. Important legislation concerning mandatory retirement and social security has passed in recent years and the nature of pension plans continues to evolve. These changes and others prompted by the aging of the population may combine to reverse the recent trend toward earlier retirement.

A. Mandatory Retirement Rules

In 1978, an amendment to the Age Discrimination in Employment Act outlawed mandatory retirement before age 70 for most American workers. The exceptions included those in occupations with bona fide age related job requirements and certain executives eligible for large pensions. Many states went further, and outlawed mandatory retirement at age 70 as well (Rhine, 1984). In 1986 the federal government followed suit, and mandatory retirement, with a few exceptions, has been eliminated.

Casual empiricism suggests that these changes might drastically alter retirement patterns, since many workers used to retire at mandatory retirement age (Barker and Clark, 1980). But econometric work indicates otherwise. Burkhauser and Quinn (1983b) found that mandatory retirement was closely intertwined with both social security and pension incentives. As described above, the social security delayed retirement credit drops significantly at age 65, from about 8 percent per year of delay to 3 percent (1 percent before 1982), which is less than actuarially fair. This implies a pay cut at age 65, which was also the most common age of mandatory retirement before 1978. In addition, mandatory retirement was usually accompanied by an employer pension plan which added work disincentives of its own. We argued that at least half of the difference in behavior between those with and without mandatory retirement was due to other factors, primarily financial incentives, and that even the unexplained residual was an overestimate of the mandatory retirement effect (Burkhauser and Quinn, 1983b). Therefore we expect that the mandatory retirement legislation will have only a modest effect on elderly labor supply (see Morrison (1988) for more detail). The stick is gone, but the carrots remain.

B. Social Security

Because of fears about the future financial solvency of the social security system and the labor market implications of earlier retirement in an aging society, the Greenspan Commission was appointed to investigate policy options. Their recommendations led to the 1983 Amendments to the Social Security Act, several of which were designed to prolong the working life of older Americans (see Svahn and Ross (1983) for details of the amendments). The age of eligibility for full social security benefits is scheduled to rise from 65 to 66 by the year 2009 and to 67 by 2027. Benefits will still be available to age 62, but the reduced benefits will only be 70 percent of the full amount rather than the current 80 percent. In addition, the benefit loss associated with additional dollar of earnings above the exempt amount will drop from 50 to 33 cents for full benefit retirees after 1990. Finally, the delayed retirement credit after age 65 will rise slowly from 3 to 8 percent per year of delay by the year 2009. All of these changes reward additional work and should help reverse the trend toward earlier retirement. Analysts agree on the direction but not the size of the effect.

Burtless and Moffitt (1984), Fields and Mitchell (1984b), and Gustman and Steinmeier (1985b) have simulated the effects of reforms like those of 1983. They all find that the aggregate impact on retirement age is modest--average delays on the order of months, not years. Burtless and Moffitt (1984) and Sickles and Taubman (1986) have hinted that delaying or eliminating social security eligibility at age 62 (which has not been legislated) would have much a larger effect on behavior. But all of these estimates are only preliminary, because they assume that the rest of the environment, especially employer pensions, remain unchanged. As we argue below, this is the great unknown.

C. Employer Pensions

The growth in employer pension coverage has ceased. According to Turner and Beller (op. cit., Table 13.2), the proportion of private sector workers covered has hardly changed since 1970. Recent news has not been in coverage, but rather in the changing distribution of types of plans.

Most workers with pensions still have primary coverage in a defined benefit plan in which the worker is promised an annuity upon retirement from the firm. The benefit is usually based on some combination of earnings and years of service (Schulz, 1988). There are also defined contribution plans, in which the firm periodically deposits funds into an account that belongs to the worker upon retirement. These are basically just savings accounts with tax advantages.

According to Turner and Beller (op. cit., Table 4.12), fewer than 13 percent of the private sector workers with pension plans had their primary coverage in a defined contribution plan in 1975. Ten years later, this had risen to nearly 30 percent. Defined contribution plans are even more popular as supplementary coverage where they are nearly universal. There are at least two implications of this. First, the investment risk is shifting from the firm to the employee. But more important from our perspective, the retirement incentives are very different. The complex and powerful accrual patterns discussed above all come from the benefit calculation formulas of defined benefit plans, which discourage work after the age of normal retirement if not sooner. There is no such work disincentives with defined contribution plans, because the employer's contribution is merely a constant wage supplement. Nearly half of all private pension coverage is still in defined benefit plans (ibid., Table 4.11) (and Ippolito (1986, Ch. 6) argues that this will remain so), so the discussion above is still relevant to understanding the current environment. But if the trend toward defined contribution plans continues and if the social security delayed retirement credit after age 65 becomes close to actuarially fair as scheduled, then the importance of these work disincentives at older ages will diminish.

V. What Can Public Policy Do To Increase Work Effort at Older Ages?

The research we have reviewed suggests that retirement trends are not exogenous. On the contrary, they are influenced by public policy. The institutional environment continues to evolve. Some changes are already underway or legislated for the future; others may occur as the composition of the work force shifts; and others may take additional specific legislation.

What changes are currently underway? Mandatory retirement has virtually been eliminated. The proportion of workers covered by age neutral defined contribution pension plans is on the rise. Social security amendments already on the books will delay the age of eligibility for full retirement benefits to 67, increase the penalty for retiring at age 62 from 20 percent to 30 percent of full benefits, decrease the earnings test tax rate from a half to a third and augment the delayed retirement credit for work beyond normal retirement age from 3 percent to 8 percent per year of delay. All of these changes should work to increase the labor force participation of older workers. But recent research suggests that the impact of the removal of mandatory retirement and the legislated changes in the social security rules on retirement patterns will be modest.

These results however must be viewed with caution. The studies on which this prediction is made estimate first round effects only. In the simulations mentioned above, Burtless and Moffitt (1984), Fields and Mitchell (1984b), and Gustman and Steinmeier (1985b) change social security rules but assume that employer pension plans remain as they are. But we believe pension plans will change. As we have shown, recent evidence suggests that pension incentives are very important in determining individual and aggregate behavior. The fact that work effort has fallen dramatically between ages 55 through 61, ages below the minimum for early social security retirement benefits, suggests that social security incentives were not the only reason for reduced work at older ages.

Hence, a key factor, about which very little is known, is how employer pension plans will change in response to social security rule changes. Some of the interaction, in "integrated plans," is automatic. Pension benefits in these plans depend on the amount of social security benefits, and an implicit tax rate is built into the benefit calculation rules. If social security benefits decrease, the pension automatically rises, though perhaps not dollar for dollar. This tends to offset the effect of social security changes. Since about two-thirds of full-time participants in defined benefit pension plans are in plans "integrated" in some way, this factor could be important (Herz and Rones, 1989). But beyond this, the rules of the pension plans are subject to change, and it is this response that is unknown, yet key to predicting the future. Will pensions augment or offset the changes in social security incentives? Would Congressional initiatives concerning pensions be nullified by other alterations in the compensation package? In general, how would the long run general equilibrium impacts compare to the short-run effects that have been estimated?

We simply do not know the answers to these questions. But we do know that ultimately the rules negotiated in the market by government, firms and unions will significantly effect the decisions workers make with respect to retirement. Most people do not retire because they can no longer find or perform work, as we once thought. Many now retire voluntarily, when they are still able to work and there is demand for their services. They do so because of the trade-offs they face in the marketplace. There are always people at the margin, and these people will change their behavior in response to changes in the choices before them.

As the first round simulations show, changes in social security legislation will have some effect in delaying retirement. But the currently slated changes will not in themselves dramatically effect length of stay in a career job. And it is this labor market decision--the departure from the career job--that is most important in determining work effort at older ages. Defined benefit pension plans continue to encourage job exit from a career job, often at the earliest possible retirement age. It is more likely that changes in pension rules, rather than social security rule changes, will have the greatest effect on full-time work on such jobs.

Bureau of Labor Statistics projections (U.S. Department of Labor, 1989) show that over the next 15 years, the population 55 and older will increase while the population aged 16 to 34 will decline. Some foresee labor market shortages emerging from these demographic changes and a halt in the trend toward earlier retirement. If employers share this concern, then we may see substantial changes in current pension policy. If not, employers may tilt lifetime benefits even more toward those who leave at early retirement age in order to offset the social security changes that will occur.

There is already some evidence that employers changed pension plans to offset the effects of delaying (and later eliminating) mandatory retirement age. Mitchell and Luzadis (1988) studied changing incentives over time in a small number of specific pension plans. Between 1960 and 1970, when "social security reforms encouraged employees to opt for earlier retirement," they found that "in many cases private pension offerings adapted to accommodate these new retirement patterns." But during the 1970s, when mandatory retirement was increased from 65 to 70 and the movement to eliminate it altogether was gathering momentum, "pensions requiring mandatory retirement...altered their benefit incentives by 1980 so as to encourage earlier retirement."

If employers want to buck the social security trend, it is not easy to force them to change. For instance, the 1986 Amendments to the Age Discrimination Act require firms with pension plans to continue to provide service credit to those who continue with the firm past normal retirement age. But this will not prevent the firm from making early retirement benefits even more generous, in order to offset this rule.

But the ability to offset government policy does not necessarily translate into counter-action. One might argue that the opposite will occur. One reason that most pension plans in the United States chose age 65 as the normal retirement age is that social security used that age. One of the original purposes of social security policy was to encourage older workers to leave the labor force and, until 1972, earnings above an exempt amount were taxed at 100 percent and benefits postponed beyond age 65 earned no actuarial credit. Given these strong disincentives to full-time work, it is not surprising that firms developed institutions that conformed. To do otherwise would have required firms to pay workers higher wages past age 65 to offset the social security penalties. Although this is more debatable, the establishment of early social security benefits at age 62 may have encouraged firms to follow suit, to the degree that workers believed social security pension accrual fell past this age. The changes in social security benefit rules scheduled to begin in the next decade will reduce the fall in social security accrual past age 62, and change the foundation on which private pensions were built.

A final speculation concerns the influence of these rule changes on the type of work that will be done by older Americans. If pension rules do not change, we expect more work after departure from the career job and more second careers. This is because the easing of social security work disincentives will make work more attractive relative to complete retirement, but pension rules will continue to discourage continued employment on the career job. The result? Keep working but switch jobs to do so.

If firms actually counter social security rule changes with even stronger incentives to leave full-time work at early retirement age, then we predict even more part- and full-time work on post-career jobs. If, however, firms match the changes in the social security system with similar attempts to flatten pension accrual across the life cycle, then workers should delay departure from the career job.

A final and very important variation on this theme is the possibility of part-time work on a career job. This has the advantage of eliminating the loss of specific human capital that accompanies a job change and reducing the wage loss associated with part-time employment. Research has established that the self-employed, who rarely have pension related work disincentives, are much more likely than wage and salary workers to move from full- to part-time work on the same job. Currently, defined benefit pension rules, especially when benefits are based on earnings in the last few years of employment, make this a costly choice for wage and salary workers who desire part-time work. What may be needed is the introduction of partial pension schemes in which workers can combine partial pension benefits, as they can now with social security, with part-time employment on the career job. Such a program for workers aged 60 to 64 exists in Sweden. The labor force participation rate of older workers there is higher than in the United States, and response to this program has been very positive (Ginsberg, 1985). As the age of eligibility for full social security benefits rises to 67, the importance of such flexible pension schemes may grow. The key question again is whether labor market demands will induce firms to offer such flexibility on their own.

It is important for policymakers to recognize the difference between policies that encourage continued work on any job and those that induce people to stay on the career job. The former include many of the social security changes already enacted and others that have been proposed, such as the total elimination of the earnings test, an earlier phase-in of the 8 percent delayed retirement credit for work past age 65, exemption of social security recipients from social security taxes on part-time earnings, or the suspension of the fringe benefits requirements under Section 89 of the Tax Code for part-time older workers. The latter focus on employer pension plans, and include policies favoring defined contribution plans, age neutral defined benefit plans, or flexible partial pension schemes.

Surveys of older workers suggest that many workers would like to retire gradually, to incorporate a period of partial retirement into the transition from full-time work to complete labor force withdrawal. Currently, only a minority do. Policies that facilitate this desire by making it less costly for firms to hire part-time workers and less costly for older workers to accept part-time employment should be considered.

REFERENCES

Addison, John T. and Castro, Alberto C. 1987. The Importance of Lifetime Jobs: Differences Between Union and Nonunion Workers. Industrial and Labor Relations Review 40:393-405.

Allen, Steven, Clark, Robert and McDermed, Ann. 1987. Pensions and Lifetime Jobs: The New Industrial Feudalism Revisited. Unpublished paper.

Anderson, Kathryn H. and Burkhauser, Richard V. 1985. The Retirement-Health Nexus: A New Measure of an Old Puzzle. Journal of Human Resources 20:315-330.

Baily, Martin N. 1987. Aging and the Ability to Work. In Gary Burtless (ed.), Work, Health, and Income Among the Elderly, Washington, D.C.: The Brookings Institution, pp. 59-97.

Barker, David T. and Clark, Robert L. 1980. Mandatory Retirement and Labor-Force Participation of Respondents in the Retirement History Study. Social Security Bulletin 43(11):20-29, 55.

Bazzoli, Gloria J. 1985. The Early Retirement Decision: New Empirical Evidence on the Influence of Health. Journal of Human Resources 20:214-234.

Becker, Eugene H. 1984. Self-employed Workers: An Update to 1983. Monthly Labor Review 107(7):14-18.

Beller, Daniel J. and Turner, John A. Forthcoming. Major Trends in Private Pensions. In John A. Turner and Daniel J. Beller, Trends in Pensions: 1988. Washington, D.C.: U.S.G.P.O.

Berkowitz, Monroe. 1988. Functioning Ability and Job Performance as Workers Age in The Older Worker (Michael E. Borus et. al., editors). Madison, WI: Industrial Relations Research Association, pp. 87-114.

Blau, David M. 1987. A Time Series Analysis of Self-Employment in the United States. Journal of Political Economy 95:445-466.

Boskin, Michael J., Kotlikoff, Laurence J., Puffert, Douglas J. and Shoven, John B. 1987. Social Security: A Financial Appraisal Across and Within Generations. National Tax Journal 40:19-34.

Burkhauser, Richard V. 1979. The Pension Acceptance Decisions of Older Workers. Journal of Human Resources 14:63-75.

Burkhauser, Richard V. and Quinn, Joseph F. 1983a. The Effect of Pension Plans on the Pattern of Life-Cycle Compensation. In Jack E. Triplett (ed.), The Measurement of Labor Cost, Chicago: The University of Chicago Press, pp. 395-415.

________. 1983b. Is Mandatory Retirement Overrated? Evidence from the 1970s. Journal of Human Resources 18:337-358.

________. 1989. Retirement Wealth Accrual and the Pattern of Post-Career Employment. In The Aging Work Force, Detroit, MI: Wayne State University Press.

Burkhauser, Richard V. and Warlick, Jennifer L. 1981. Disentangling the Annuity from The Redistributive Aspects of Social Security in the United States. Review of Income and Wealth 27:401-421.

Burtless, Gary. 1987. Occupational Effects of the Health and Work Capacity of Older Men. In Gary Burtless (ed.), Work, Health and Income Among the Elderly, Washington, D.C.: The Brookings Institution, pp. 103-142.

Burtless, Gary and Moffitt, Robert A. 1984. The Effect of Social Security Benefits on the Labor Supply of the Aged. In Henry J. Aaron and Gary Burtless (eds.), Retirement and Economic Behavior, Washington, D.C.: The Brookings Institution, pp. 135-171.

________. 1985. The Joint Choice of Retirement Age and Postretirement Hours of Work. Journal of Labor Economics 3:209-236.

Butler, J. S., Anderson, Kathryn H. and Burkhauser, Richard V. 1989. Work and Health After Retirement: A Competing Risks Model with Semiparametric Unobserved Heterogeneity. Review of Economics and Statistics.

Butler, J. S., Burkhauser, Richard V., Mitchell, Jean M. and Pincus, Theodore P. 1987. Measurement Error in Self-Reported Health Variables, Review of Economics and Statistics 69:644-650.

Chapman, Steven H., Mitchell P. LaPlante and Gail Wilensky. 1986. Life Expectancy and Health Status of the Aged. Social Security Bulletin, 49(10):24-48.

Chirikos, Thomas N. and Nestel, Gilbert. 1981. Impairment and Labor Market Outcomes. In Herbert S. Parnes (ed.), Work and Retirement: A Longitudinal Study of Men, Cambridge, MA: M.I.T. Press, pp. 93-131.

Fields, Gary S. and Mitchell, Olivia S. 1984a. Economic Determinants of the Optimal Retirement Age: An Empirical Investigation. Journal of Human Resources 19:245-262.

________. 1984b. The Effects of Social Security Reforms on Retirement Ages and Retirement Incomes. Journal of Public Economics 25:143-159.

________. 1984c. *Retirement, Pensions, and Social Security*. Cambridge, MA: The MIT Press.

Fuchs, Victor. 1982. Self-Employment and Labor Force Participation of Older Males. *Journal of Human Resources* 17:339-357.

Ginsburg, Helen. 1985. Flexible and Partial Retirement for Norwegian and Swedish Workers. *Monthly Labor Review* 108(10):33-43.

Gustman, Alan L. and Steinmeier, Thomas L. 1983. Minimum Hours Constraints and Retirement Behavior. *Contemporary Policy Issues* 3:77-91.

________. 1984a. Partial Retirement and the Analysis of Retirement Behavior. *Industrial and Labor Relations Review* 37:403-415.

________. 1984b. Modeling the Retirement Process for Policy Evaluation and Research. *Monthly Labor Review* 107(7):26-33.

________. 1985a. The Effects of Partial Retirement on Wage Profiles for Older Workers. *Industrial Relations* 24:257-265.

________. 1985b. The 1983 Social Security Reforms and Labor Supply Adjustments of Older Individuals in the Long Run. *Journal of Labor Economics* 3:237-253.

Hall, Robert E. 1982. The Importance of Lifetime Jobs in the U.S. Economy. *American Economic Review* 72:716-724.

Herz, Diane E. and Philip L. Rones. 1989. Institutional Barriers to Employment of Older Workers. *Monthly Labor Review* 112(4):14-21.

Honig, Marjorie. 1985. Partial Retirement Among Women. *Journal of Human Resources* 20:613-621.

Honig, Marjorie and Hanoch, Giora. 1985. Partial Retirement As a Separate Mode of Retirement Behavior. *Journal of Human Resources* 20:21-46.

Honig, Marjorie and Reimers, Cordelia. 1987. The Labor Market Mobility of Older Workers. Hunger College, Department of Economics, Mimeo.

Iams, Howard M. 1987. Jobs of Persons Working After Receiving Retired-Worker Benefits. *Social Security Bulletin* 50(11):4-17.

Ippolito, Richard A. 1986. *Pensions, Economics and Public Policy*. Homewood, IL: Dow Jones-Irwin.

________. 1987. The Implicit Pension Contract: Developments and New Directions. *Journal of Human Resources* 22:441-467.

Irelan, Lola M. 1973. Retirement History Study: Introduction.

Social Security Bulletin 35(11):3-8.

Johnson, William G. 1977. The Effect of Disability on Labor Supply: Comment. Industrial and Labor Relations Review 30:380-381.

Jondrow, Jim, Brechling, Frank and Marcus, Alan. 1987. Older Workers in the Market for Part-Time Employment. In Steven H. Sandell (ed.), The Problem Isn't Age: Work and Older Americans, New York, NY: Praeger, pp. 84-99.

Kingson, Eric R. 1982. The Health of Very Early Retirees. Social Security Bulletin 45(9):3-9.

Kotlikoff, Laurence J. and Smith, Daniel E. 1983. Pensions in the American Economy. Chicago: The University of Chicago Press.

Kotlikoff, Laurence J. and Wise, David A. 1985. Labor Compensation and the Structure of Private Pension Plans: Evidence for Contractual versus Spot Labor Markets. In David Wise (ed.), Pensions, Labor and Individual Choice. Chicago: The University of Chicago Press: 55-85.

________. 1987a. Employee Retirement and a Firm's Pension Plan. National Bureau of Economic Research Working Paper No. 2323.

________. 1987b. The Incentive Effects of Private Pension Plans. In Zvi Bodie, John Shoven and David Wise (eds.), Issues in Pension Economics, Chicago: The University of Chicago Press, pp. 283-336.

Mitchell, Olivia S. and Fields, Gary S. 1984. The Effects of Pensions and Earnings on Retirement: A Review Essay. In Ronald G. Ehrenberg (ed.), Research in Labor Economics, Greenwich, CT: JAI Press, Volume 5, pp. 115-155.

Mitchell, Olivia S. and Luzadis, Rebecca. 1988. Changes in Pension Incentives Through Time. Industrial and Labor Relations Review 42:100-108.

Moffitt, Robert A. Trends in Social Security Wealth by Cohort. 1984. In Marilyn Moon (ed), Economic Transfers in the United States, Chicago: The University of Chicago Press, pp. 327-347.

Morrison, Malcolm. 1988. Changes in the Legal Mandatory Retirement Age: Labor Force Participation Implications. In Rita Ricardo Campbell and Edward Lazear (eds.). Issues in Contemporary Retirement, Stanford: Hoover Institution Press, pp. 307-405.

Myers, Robert J. 1982. Why Do People Retire From Work Early? Social Security Bulletin 45(9):10-14.

Parnes, Herbert S. 1988. The Retirement Decision in The Older Worker, Madison: Industrial Relations Research Association, pp. 115-150.

________ and Less, Lawrence J. 1985. The Volume and Pattern of Retirements, 1966-1981. In Herbert S. Parnes, et al., Retirement Among American Men, Lexington, MA: Lexington Books, pp. 57-77.

Parsons, Donald O. 1982. The Male Labor Force Participation Decision: Health, Reported Health and Economic Incentives. Economica 49:81-91.

Quinn, Joseph F. 1977. Microeconomic Determinants of Early Retirement: A Cross-Sectional View of White Married Men. Journal of Human Resources 12:329-347.

________. 1980. Labor Force Participation Patterns of Older Self-Employed Workers. Social Security Bulletin 43(4):17-28.

________. 1981. The Extent and Correlates of Partial Retirement. The Gerontologist 21:634-643.

Quinn, Joseph F. and Burkhauser, Richard V. 1983. Influencing Retirement Behavior: A Key Issue for Social Security. Journal of Policy Analysis and Management 3:1-13.

Quinn, Joseph F., Burkhauser, Richard V. and Myers, Daniel C. 1989. (title undecided). Kalamazoo, MI: The W. E. Upjohn Institute for Employment Research.

Rhine, Shirley H. 1984. Managing Older Workers: Company Policies and Attitudes. New York: The Conference Board.

Ruhm, Christopher J. 1988a. Bridge Jobs and Partial Retirement. Boston University. Mimeo.

________. 1988b. From Job Shopping to Job Stopping: Career Employment and Retirement in the United States. Boston University. Mimeo.

Sammartino, Frank J. 1987. The Effect of Health on Retirement. Social Security Bulletin 50(2):31-47.

Schulz, James H. 1988. The Economics of Aging. New York: Van Nostrand Reinhold Co.

Sickles, Robin C. and Taubman, Paul. 1986. An Analysis of the Health and Retirement Status of the Elderly. Econometrica 54:1339-1356.

Svahn, John A. and Ross, Mary. 1983. Social Security Amendments of 1983: Legislative History and Summary of Provisions. Social Security Bulletin 46(7):3-48.

Turner, John A. and Beller, Daniel J. Forthcoming. Trends in Pensions: 1988. Washington, D.C.: U.S.G.P.O.

U.S. Department of Labor. 1989. Report of the Secretary of Labor Older Worker Task Force: Key Policy Issues for the Future. Washington, D.C.: U.S.G.P.O.

Ycas, Martynas A. 1987. Recent Trends in Health Near the Age of Retirement: New Findings From the Health Interview Survey. Social Security Bulletin 50(2):5-30.

________ and Grad, Susan. 1987. Income of Retirement-Aged Persons in the United States. Social Security Bulletin 50(7):5-14.

21. LABOR FORCE PARTICIPATION AND EMPLOYMENT AMONG YOUNG MEN: TRENDS, CAUSES, AND POLICY IMPLICATIONS

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21. LABOR FORCE PARTICIPATION AND EMPLOYMENT AMONG YOUNG MEN: TRENDS, CAUSES, AND POLICY IMPLICATIONS

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Introduction

In this paper I will review recent secular trends in labor force participation and employment among young men.[1] Special attention will be paid to specific demographic groups, such as high school dropouts and minorities, whose participation and employment rates have particularly declined.

I will then review several potential causes of these developments, as well as the empirical literature and evidence on these causes. With regards to labor force participation, I will consider factors on both the demand-side and supply-side of the labor market. The former will include evidence on changes in relative and absolute real wages, caused by demographic changes (i.e., Baby Boom/Baby Bust) and changing returns to education. The latter will include the attractiveness of non-market, alternative income sources (e.g., transfer payments, illegal activities, etc.) which affect reservation (i.e., minimum acceptable) wages, as well as the interaction between participation and family/household structure. We will also discuss factors which might affect participation and/or employment rates specifically for minorities.

The rest of the paper will be laid out as follows: Section I presents evidence on recent trends in participation and employment for different groups of young people, while Section II reviews the standard economic model of participation which generates potential causes of these developments; Section III reviews the empirical literature on demand-side and supply-side causes of participation changes, as well as additional evidence on employment changes for minorities.

In Section IV I conclude and discuss policy implications.

I. Trends in Employment and Participation

In Table 1 we find population levels as well as labor force participation rates, employment-to-population ratios and unemployment rates (for those in the labor force) of young people for selected years between 1955 and 1987. The particular years are chosen to reflect comparable points in the business cycle (so as to consider only secular trends) and to include at least one observation prior to the "Baby Boom/Baby Bust" years.[2] Separate data are presented for the four race-by-sex groups among young people, as well as for those 16-19 and 20-24.[3,4]

Several important trends emerge from Table 1. The rapid growth in the population levels of young people shows the effects of the "Baby Boom" between 1964 and 1978 while those for 1987 begin to show effects of the "Baby Bust". Labor force participation trends are quite divergent between males and females in this age group. Young white females show significant increases in participation, while young black females show a slower rise and a growing gap relative to their white counterparts. Among young white males, participation rates increased quite sharply for teens through the late 1960's and 1970's but they have declined significantly since 1978. Among white males aged 20-24, participation has been relatively constant over time. In contrast, participation for young black males has consistently declined in both age categories since the early 1970's. We also note that employment-to-population ratio changes seem to move fairly consistently with labor force changes. Finally, we note unemployment rate increases for all groups through the 1970's. The increases were largest for blacks and females, and these groups have begun to show some limited improvement (both absolutely and relative to white males) by 1987. Still, unemployment rates of young blacks remain 2½ to 3 times larger than those of young whites, while their participation and employment rates are considerably lower.

In Table 2 we focus more specifically on the labor force participation rates of young people and their relationships to rates of school enrollment. We provide participation and enrollment rates for teens and for those aged 20 through 24, as well as for males and females in each of the years considered in Table 1.

The results show that since 1964, school enrollment has declined for all groups except females aged 20 through 24. As the non-enrolled have higher participation rates than do the enrolled, these trends alone should tend to raise overall participation rates of young people. Among the enrolled, participation rates of both males and females have generally risen since 1964 (though a small decline has occurred for male teens in the 1980's). As for the non-enrolled, participation has generally risen among females and declined among males. The decline among males has been gradual but consistent for those in their twenties, while for non-enrolled male teens the decline has been very sharp since 1978.

Furthermore, the sharp decline among non-enrolled male teens suggests that much of the change involves high school dropouts, who would constitute most of the non-enrolled below the age of 18. More evidence on this issue appears in Table 3, where we find participation rates for young nonenrolled males in 1978 and 1987. The results show that participation rates of high school dropouts declined from 86.5 percent to 76.8 percent between 1978 and 1987 for males aged 16 through 24. Among non-enrolled high school graduates and those with college degrees we find much smaller declines in participation.

It is also particularly disturbing to find nonparticipation growing among those who are not engaged in another productive activity, such as schooling. Both their lack of current employment and their lack of schooling may further inhibit their employment opportunities in future years.

In sum, we find that participation rates among females are generally rising while those among non-enrolled and/or minority males are declining. The declines appear to be most serious for the least educated in these groups.

II. Determinants of Labor Force Participation and Employment - The Theory

The standard economic model of labor supply was developed to explain individual decisions to participate in the labor force as well as their choices of how many hours to work, if they do so at all. Here we focus on the former decision only.

The model posits that individuals are most likely to enter the labor force when: 1) they face high market wages; 2) their nonwage income sources are low; and 3) the value which they place on time relative to income is also low.

The interaction of supply and demand forces at the market level determines the wages which prospective individual workers face in that market. Assuming that individuals can find as much work as they want to at their market wages, these wages would fully reflect the demand for labor which they face in the market. All factors affecting that demand, such as worker skills, firm technologies, etc., would be reflected in these wages.

However, it is quite clear that individuals cannot always find as much work as they want to at their market wages. This is particularly true during recessions, but it may also be true for young workers in prosperous times if wages are not free to adjust to market conditions (because of legally set minimum wages, unions, or employer personnel policies).

In such cases, labor demand will influence individuals' participation decisions through the likelihood of their finding jobs as well as through the wages which they will receive, with both having positive effects on participation. Anything which may limit that demand, including low skills, lack of previous experience, employer discrimination, lack of "contacts" and information in the market, etc., will likely limit participation as well as employment. Recessions, declining industries, and other sources of high local unemployment may also limit participation, though these effects are more ambiguous (for reasons noted below). All of these forces could thus lead to "discouraged worker" nonparticipation. Furthermore, the effects of minimum wages and unions on participation are also not clear, since they raise wages but lower the individual's employment chances.

As for factors which directly affect workers' own supply decisions, nonwage income is clearly important. Such income generally reflects money and other provisions from spouses and/or parents, and is therefore closely related to housing arrangements and marital status. Thus, young people living at home are less likely to work than are those living on their own, and married women are less likely to work as well. But for young men, marriage may mean more participation rather than less, especially if their spouse's earnings are relatively low and if they feel some responsibility to "provide".

The importance of a spouse's earnings as a form of nonwage income creates another potential effect of recessions or local unemployment on labor force participation. Since the spouse with earnings may suffer unemployment due to these factors, the disappearance of these earnings may induce the non-working spouse to enter the labor market, though perhaps temporarily. This "added worker" effect may counteract the negative "discouraged worker" effect of unemployment noted above.

Other sources of nonwage income may include government transfer programs and illegal activities. Transfer programs such as Aid to Families with Dependent Children (AFDC, or "Welfare"), food stamps, Medicaid, etc. may discourage participation if they are high in value relative to what can be earned in the market. Illegal activities run the gamut from unreported work in the "Underground Economy" (in order to avoid tax payments) to more serious crimes which provide income. Of course, the decision to choose such sources entails the risks of arrest, conviction, and incarceration which must be balanced against the potential monetary rewards when the choice is made.

The value of time relative to income is closely related to these issues as a determinant of labor force activity. Those who value their leisure time are less likely to work, as are those (usually women) with responsibility for childrearing (or other work in the home). This may be especially true for single mothers. Also, young people enrolled in school are less likely to participate in the labor force; even part-time work may detract from time spent studying, thereby lowering student performance and future earnings as well.

Both nonwage income sources and alternative uses of time help to determine an individual's "reservation wage," i.e., the lowest acceptable wage. It is through the reservation wage that labor supply factors affect individual participation, while labor demand works through the wages and probabilities of employment which individuals face in the market; and it is a comparison of the reservation wage with expected wages (and employment chances) in the market that determines the individual's decision to participate in the market. Finally, the participation (as well as hours of work) decisions of all individuals together determine labor supply in the market which, together with labor demand by firms, result in the overall wage and employment levels which we observe.

III. Participation and Employment of Young Males: The Evidence

In this section we review the empirical literature on the labor force participation of young males (generally defined as those aged 16 through 24), for whom secular declines appear to be occurring. We will review the direct evidence on the determinants of participation, and then consider some possible causes of the trends over time and differences across groups (e.g., blacks and whites) that were noted in Section I above. Because of the potentially close link between employment/unemployment and participation effects noted above, we will include some evidence on the former set of issues as well. We consider labor demand and then labor supply effects separately below.

A. Labor Demand: Wage and Employment Effects

A number of empirical studies have been done which show the effects of labor demand on labor force participation of youth. The classic work of Bowen and Finegan (1969), using data on individuals from the 1960 Census of Population, showed that participation of young males rose with average earnings. Of course, earnings are not observed for those out of the labor force; in this case, they must be either taken from a previous period when the individual did work, statistically imputed, or proxied by other factors. Among proxies, the individual's educational attainment is often used. Bowen and Finegan, and others since then (e.g., Welch (1989)), have found positive effects of such attainment (though not of enrollment) on participation as well.

More recent evidence on the effects of wages on participation of youth confirm these findings. Gustman and Steinmeier (1981), focusing on those aged 17-22, find positive effects of local youth wages (relative to those of adults) on the participation rates of those not enrolled in school, though their estimated effects are not large.[5] Williams (1987) focuses on male teens and also finds positive (and somewhat larger) effects of wages for both whites and blacks on transitions into the labor force, while Cain (1987) finds that youth participation rises with family income. Since family income could be a source of nonwage income for young people that would reduce the participation of those from high-income families, the observed positive effects of family income are instead attributed to the higher wages attained by youth from these families. In fact, moving from families with incomes under $15,000 (1980 dollars) to those at or above $30,000 we generally see wages rising by about 10 percent and participation rates rising 5-10 percentage points.

The effects of overall (i.e., including adult) local or national unemployment on youth labor force participation also appear to be negative in virtually all studies, thereby suggesting an additional role for labor demand through "discouraged worker" effects. In particular, Freeman finds participation rates of young workers falling 1-2 percentage points for every percentage point rise in the prime-age male unemployment rate.

Bowen and Finegan found negative effects of local unemployment, as do Gustman and Steinmeier, Freeman (1982) and Cain and Finnie (1987). Bowen and Finegan as well as Freeman also considered the effects of various indices of demand for young labor based on local industrial structure. In Freeman's case, the fractions of each industry's nationwide employment that is accounted for by youth is weighted by the fraction of area employment accounted for by that industry, thus creating an index measuring overall local demand for youth. For Bowen and Finegan as well as Freeman, these indices showed positive and significant effects on participation of young males.

Furthermore, several authors find even larger effects of local demand on the participation of young blacks. In particular, Williams finds larger effects on blacks in both time-series data (using lagged unemployment rates and controlling for trend) and cross-sectional data, which seem to account for substantial fractions of the observed black-white differences in participation of young workers. Cain and Finnie find significant positive effects of the employment of young whites and negative effects of adult black unemployment on the participation of young black males. Gustman and Steinmeier also find effects of local unemployment to be substantially larger for young blacks than young whites, though wage effects are fairly comparable.

A further effect of labor demand on participation of young males might occur though influencing its effect on school enrollment, which we have seen to be negatively correlated with participation. In fact, Gustman and Steinmeier find enrollment to be negatively related to wages and positively to local unemployment, thus moving in the opposite directions from participation. A few authors have also considered the effects of minimum wages on both enrollment and participation. This effect is somewhat ambiguous a priori, since higher minimum wages may also mean higher unemployment for young workers (an issue considered in greater detail below). In fact, Mattila (1978) finds higher enrollments in years of high minimum wages, while Ehrenberg and Marcus (1982) find negative effects on enrollments for young people from low-income families and positive effects on those from higher-income families. The higher minimum wages thus seem to induce low-income workers to leave school for the labor market while higher-wage workers show an opposite effect.

Declining Wages of Young Men

Since the evidence clearly indicates that labor demand factors play an important role in determining participation rates for both young blacks and whites, we must next consider how changes in demand may have contributed to the observed declines in participation of the nonenrolled and black males in recent years. The labor market for young males has been buffeted by several major demographic and secular economic shifts during this period that should have caused large changes in the demand for particular groups of young males. These changes include: 1) The entrance of the "Baby Boom" cohort into the labor market in the mid-to-late 1960's and 1970's; 2) The subsequent aging of this cohort and the entrance of the "Baby Bust" cohort in the 1980's; 3) The huge growth of the female labor force in the 1960's and 1970's; 4) Shifts in demand away from the manufacturing/heavily unionized sectors towards service/unionized sectors; 5) Dramatic slowdowns in productivity growth; and 6) Changes in enrollment patterns.

There has been convincing evidence for quite some time now that the "Baby Boom" lowered wages and raised unemployment among young workers in the 1970's (Welch (1979), Freeman (1979), Wachter and Kim (1982)).

Given the rise in college enrollment rates of the 1960's, the fall in earnings was largest for college graduates (Freeman (1977), Berger (1983)).[6] The "Baby Boom" effect appears to have been compounded by the growth of the female labor force, since women seem to be most "substitutable" (or competitive) with young men in the labor market (Grant and Hamermesh (1982)). The substitution seems particularly strong for young black men (Borjas (1986)).

As the "Baby Boom" cohort has aged in the 1980's and has been replaced among youth by the "Baby Bust" group, some of this has changed. In particular, employment prospects and wage levels should improve for the latter group. However, the wage gains appear to be concentrated primarily among college graduates. This has been predicted by some models as a consequence of the "Boom-Bust" phenomenon and the limited scope for substitution between younger and older college graduates, as the skills of the latter became more obsolete (Dooley and Gottschalk (1984), Stapleton and Young (1988)). The falling rate of college enrollments in the 1970's and 1980's (see Table 2) has made the current group of young college graduates even scarcer and high school graduates more plentiful, thus further increasing the gap between them in earnings.

On top of these demographic and enrollment changes have been some larger changes in the economy that reinforce the developments described here. In particular, the relative shifts in demand away from manufacturing and related industries towards the service and financial sectors seem to be further raising the demand for college graduates and lowering them for non-college graduates, though there remains some doubt about the magnitude of this effect (Murphy and Welch (1988), Bound and Johnson (1989)). Slow productivity growth, industrial relocation towards the South, and the rise of involuntary part-time work among men all appear to have further reduced the relative and real earnings of young, less-educated males (Beach (1988), Levy (1988)).[7] Finally, declines in unionization rates and the real value of the minimum wage (since it was last increased in 1981) presumably hurt the wages of the young and least educated as well, though their effects on both employment and participation for young workers may be somewhat more positive (Brown et al. (1982), for minimum wages; Holzer (1982) and Montgomery (1989) for unionism).[8]

The net effects of all of these changes on employment and unemployment were seen in Table 1, where improvements for the youngest group by 1987 begin to appear. Some evidence on earnings appears in Table 4. The table shows median income of males for various age groups and education groups in 1972 and 1986. In Part A of the table, we find median income by age group for all those with income during the year and only for those who worked year-round and full-time. The latter measure is in many ways preferable, since it reflects only wage effects rather than employment effects. In Part B, we find median income by education for year-round, full-time workers only. These are presented for all aged 25 and over as well as for the group aged 25 through 34 in each year (data by education are not available for those below age 25). All numbers reported are in 1986 dollars.

The data of Table 4 show clearly declining real incomes for virtually all groups of male workers between 1972 and 1986. For all age groups combined, the median income reported in 1986 is about 96 percent of that in 1972 for all with income, though it is about 3 percent higher for year-round, full-time workers of all ages. Younger workers show the largest declines between 1972 and 1986. Teens in 1986 earned about 90 percent of their incomes in 1972 and about 96 percent for year-round full-time workers. At least the latter group thus appear to be benefiting from the "Baby Bust" effects. Those aged 20 through 24 in 1986 are making only about 81 percent of their earlier incomes, and about 85 percent for year-round full-time workers. For those aged 25 through 34, the comparable numbers are 87 percent and 92 percent respectively.

The median incomes by education groups (for year-round, full-time workers only) in Part B of the table tell a similar story. Among college graduates, real incomes in 1986 are 98 percent of those in 1972, both for those above age 25 and for those aged 25 through 34. Comparable numbers for high-school graduates are 94 percent and 87 percent, while for those without high-school diplomas the numbers are about 88 percent and 74-81 percent respectively. Clearly, young workers without college degrees and especially those without high-school degrees are facing dramatic declines in their real earnings. The results of Part A of this table suggest that these trends are even stronger for those in their early 20's. Furthermore, the decline in earnings of young blacks relative to young whites that has occurred in the late 1970's and 1980's (Bound and Freeman (1988)) implies that these results could be even more severe if calculated separately for young black males.[9]

All of these results strongly suggest that the observed decline in labor force participation among non-enrolled young males and especially young black males should be at least partly explained by their fall in real earnings (though it is difficult to say with any degree of confidence how much of the observed effect is so explained). The fact that participation, employment and real market wages are all falling also points to the importance of labor demand rather than labor supply shifts in explaining these developments. But the full explanation must also examine alternative uses of time and sources of income for these young people, which we will consider in the section on labor supply below.

Black-White Demand Differences

Before moving to the next section, it may be useful to review a bit more evidence on differences in relative demand facing young blacks and whites. As noted above, the declines in demand caused by growing female labor force participation and other factors appear to have been larger for young blacks than for whites (Borjas (1986)), and in general the demand for young blacks seems to be more sensitive to overall demand conditions. It is at least possible that the decline of manufacturing and unionized employment, on which young blacks have traditionally been more dependent, have hurt them relatively more as well; however, the evidence to date on this issue is very incomplete.[10] Shifting demand from agriculture towards manufacturing appears to have hurt the employment of young, southern blacks between 1950 and 1970 (Cogan

(1982)); changes since then are more ambiguous in their relative effects.

At any point in time, the relatively lower demand faced by young blacks is usually thought to be caused by some combination of lower skills and discrimination. It is clear, for instance, that educational performance as measured by grades has important effects on employment for both young blacks and whites, and that young blacks do less well in such performance measures (Meyer and Wise, 1982b). But it is not clear why either skill or discrimination problems of young blacks should have grown worse in the last two decades. If anything, government Equal Opportunity and Affirmative Action activities appear to have raised the relative demand for black males (Freeman (1980), Leonard (1985)).[11] Relative skills as measured by years of education as well as test scores have also converged over time (Smith and Welch, 1987).

It is, however, possible that employer perceptions of less-educated, low income blacks have grown more negative over time because of growing concerns about absenteeism, turnover, crime, vandalism, etc. (Jencks (1987)). High rates of discharge for black youth when they are employed can be at least partly traced to absenteeism and other problems of performance on the job (Jackson and Montgomery (1986), Ferguson and Filer (1986)). It is also possible that the information and "connections" of young blacks in the labor market have diminished because of their growing tendency to live in female-headed, welfare households in which no other adults are employed. We have no direct evidence on changes over time in information or connections. But there is clear evidence that the employment status of their siblings has significant effects on the employment of young people in general (Rees and Gray (1982)), which therefore reflect some direct family effects. Also, most of the employment problems faced by young blacks occur when searching informally for jobs, i.e., when using friends and relatives for information or applying directly to employers without referrals (Holzer (1987)).

Furthermore, any early difficulties which young blacks face in obtaining employment seem to reproduce themselves in later years. Both Meyer and Wise (1982a,b) and Ellwood (1982) find that the lost labor market experience caused by early unemployment has longer-term negative effects on wages. For younger blacks, (and, to a lesser extent, young whites) this seems to mean lower participation and employment rates in future years. Indeed, Ballen and Freeman (1986) find that the employment rates of inner-city young blacks do not increase with age to the same extent as do those of young whites and blacks more generally. They trace this effect (through employer interviews) at least partly to the poor work histories which many young blacks clearly have as they apply for new jobs. Also, the successive spells of nonemployment which these young blacks experience do not seem to diminish in duration, which implies that many inner-city young blacks are gaining little in the way of useful work experience and/or talents from the jobs which they do obtain.

One final source of demand problems often hypothesized to exist for young blacks is the movement of firms to suburban areas while blacks remain concentrated in inner-city areas. While such movement has clearly occurred over time, there has been conflicting evidence recently on this question. Some papers suggest that the overall employment effects for young blacks may not be large (Ellwood (1986), Leonard (1987)), while others (Ihlanfeldt and Sjoquist (1989)) find them to be substantial. This issue thus remains a topic of much continuing research and controversy.

B. Labor Supply Effects on Participation and Employment

As noted in Section II, labor supply effects on participation will usually reflect an individual's nonwage income sources and alternative uses of time outside of the labor market, such as in school or in caring for a family. These factors, as well as the general value of income relative to time, will determine the reservation wage of an individual, which is compared to the expected value of the market wage. Our direct evidence on these issues is somewhat mixed and incomplete, especially with regards to changes over time. However, some inferences about their effects is still possible.

With regards to school enrollments, the data are quite clear. As noted above, enrollments for most groups of young workers have declined since the mid-1960's. This decline would be expected on the basis of the falling rates of return to higher education that were experienced during the 1960's and 1970's (Freeman, (1971, 1977)). As the rate of return has risen again in the 1980's, this trend should be reversed. But even as enrollments were declining for most youth, they rose for young blacks between the 1960's and 1980's. This rise (along with rising participation in the military) helps to explain a third or more of the decline in overall civilian participation and employment rates of young blacks relative to young whites during that time (Mare and Winship (1983), Ellwood and Wise (1983)).

While marriage is generally negatively correlated with labor force participation among women, they are positively correlated for young males (Cain (1987)). Marriage for men seems to imply responsibilities that translate into a higher value of income relative to time (although marriage also seems to have positive effects on wages.) Thus, the falling marriage rates of young males in recent years may have contributed to their lower participation. Furthermore, black young men have significantly lower rates of marriage than do young whites (11 percent and 18 percent of these aged 16 through 24 respectively, according to Cain (1987)). Of course, distinguishing cause from effect is difficult here, since labor market difficulties might also explain low marriage rates (Wilson (1987)).[12]

A related issue involves household structure, since living with parents for young people is negatively related to labor market activity (McElroy, (1985)). With no obvious downward trend in the fraction of young males who live on their own, it is unlikely that this factor contributes to the downward trend in participation for young males. Young blacks do live with their families more frequently than do young whites, but once again the direction of causation is unclear here.

With regards to nonwage income sources, we note that unemployed young males are generally not eligible to directly receive transfer payments such as AFDC unless they are heads of households with children, which the vast majority are not. Lerman (1986) finds that young males living in AFDC households are less likely to be employed than are comparable youth from non-AFDC homes; but he considers it unlikely that this is due to a high marginal tax rate on their income (i.e., tendency to lose benefits as earned income rises), since most states do not put great emphasis on the earnings of non-heads when calculating benefits. A more general negative effect of such income on participation is also unlikely, since families on AFDC generally are low-income and since family income seems to be positively correlated with participation (as noted above). Freeman (1986) also finds negative effects on employment for black youth in female-headed households or whenever there is no employed adult in the household. Possible interpretations of these results include low (unobserved) skills, lack of connections in the labor market, or lack of work ethic. The potential role of attitudes and work ethic on employment of black youth is also stressed by Datcher-Loury and Loury (1986), though again the potential correlation of expressed attitudes with other individual characteristics makes it difficult to interpret these results exactly.

Another source of nonwage income for young males involves illegal activity, whether it be unreported work in the "Underground Economy" or more serious criminal activity, especially that involving drug trafficking. These factors are likely to be particularly important for young men who are neither enrolled in school nor participating in the regular labor force.

Of course, the very illegal nature of this income makes it very difficult to analyze in survey data on employment and participation. The literature on this issue generally shows negative but weak relationships between crime and employment (Freeman (1983)), and once again the direction of causation remains in doubt. (i.e., Does weak employment lead to participation in crime or vice-versa?)

For inner-city black youth, Viscusi (1986) finds that an expected gap between income from illegal activity and from market work raises the probability of participating in such activity while higher expected probabilities of arrest and conviction lower such activity. Given that the expected gap between these income sources is likely to be higher for black youth than for whites, it is likely that substitution of illegal activity for market work occurs to a greater extent for them. For young men of both races, prison time is clearly negatively correlated with employment, education, and labor force activity in the 1980 Census (Welch (1989)). The rise in criminal activity over time by the young as reported in official government records also suggests a possible link between crime and declining participation of young males overall.

Another approach to these issues involves the analysis of reservation wages of young males. High reservation wages can potentially cause lengthy durations of unemployment as well as nonparticipation in the labor force; and a great deal more attention has been placed on studying the former in empirical work to date.[13] Also, the subjective and hypothetical nature of responses to survey questions on reservation wages has led some economists to prefer drawing inferences from (presumably) more reliable data on wages and employment.

With regards to youth, Finis Welch (1989) has recently argued that the observed declines in employment and participation rates of black youths during times when their wages have been rising suggests that their relative reservation wages must have risen substantially during this period. Analyzing self-reported reservation wages from survey data, Holzer (1986a,b) finds some evidence of comparable reservation wage *levels* between young blacks and whites and therefore of 10-15 percent higher reservation wages *relative* to market wages for young blacks. These higher relative reservation wages then appear to explain significant fractions (i.e., up to about 20 percent) of the higher unemployment rates of young black males. Elijah Anderson (1980) also finds evidence of young blacks refusing to accept low-wage employment in interviews conducted among inner-city youth in Philadelphia.[14]

As for changes in reservation wages among young males over time, there has been little explicit analysis to date on this issue. Only Kim (1981) has compared self-reported reservation wages for both blacks and whites between the late 1960's and late 1970's/early 1980's, and he finds some evidence of rising reservation wages relative to market wages for both (and especially for young blacks). However, small sample sizes and other statistical problems in this work leave us with some questions on this issue.

To sum up, the evidence reviewed here suggests a potentially important role for illegal income and high reservation wages relative to market wages in explaining the low employment and participation rates of black youth. The evidence on changes over time in these factors for both young blacks and whites is sketchier but still suggests the possibility of a role here as well in explaining falling participation rates over time.

IV. Conclusions and Policy Implications

The evidence presented in the preceding sections of this paper show a decline in labor force participation of nonenrolled young men that has been independent of the business cycle and has been heavily concentrated among blacks and those less educated. Among the potential causes of these developments, a decline in the demand for the labor of these young men (and the resulting fall in the wages they face in the market) seems to have the greatest potential explanatory power. Other factors, such as the greater willingness of young men to remain unmarried and to participate in illegal activities, may be important as well in keeping reservation wages high relative to falling market wages. Potentially positive developments for these youth, such as the small size of the "Baby Bust" cohort that is now entering the labor force, appears to have lowered unemployment rates among young people but has not yet had a large effect on the wages of the less-educated.

It therefore seems as though large-scale economic and demographic forces, as well as the responses of youth to those forces, are driving the observed changes in the labor force. At least to some extent, these forces should generate self-correcting mechanisms over time that will help to alleviate the problems discussed here. For instance, there is some evidence that the wages of less-educated young workers have risen quite substantially recently in various tight local labor markets, such as that of Boston (Freeman (1988)). If economic growth and/or the "Baby Bust" continue to generate tight labor markets in other parts of the country, the implications for the young and less-educated will be quite positive. Furthermore, the currently high rates of return to education and low returns to high-school dropouts should themselves encourage higher post-secondary school enrollments and lower dropout rates. By changing the relative supplies of young workers with different levels of education, such changes in enrollments will help to equalize wages somewhat across these groups.

But it is also quite unlikely that economic and demographic forces alone will totally resolve these problems. For one thing, a cyclical downturn in the coming years would dampen these developments by reducing the positive effects of demand for the young and less-educated. Furthermore, employment problems of groups such as young black men have steadily worsened (or remained very serious) over time despite major cyclical shifts and other economic changes. Thus new policy responses to combat these developments may be appropriate. Given the apparent causes of the declines in participation, the goals of such policies should be to: 1) Discourage dropping out from high school; and 2) Raise the demand for labor among the less-educated, either by enhancing their skills or by lowering their costs to employers.

1) Education/Training Programs

Of course, these are not particularly new policy goals, and some evidence exists on previous attempts to achieve them. For instance, several experimental employment and training programs for young men have had the goals of enhancing their skills and work experience as well as discouraging their dropping out from school. The Youth Incentive Entitlement Pilot Project (YIEPP) from 1978 through 1981 provided part-time employment during the school-year and full-time employment during the summer on the condition that the participants remain enrolled. Post-program evaluations (Gueron (1984)) indicated that YIEPP succeeded in raising employment of youth as much as a year afterwards but did not raise wages. Furthermore, high school graduation rates were not significantly higher for program participants. In the more recent Summer Training and Education Program (STEP), developed by Public/Private Ventures in 1984, disadvantaged youth receive part-time work and part-time skills remediation over a few summers and a school-year. Evaluations (Sipe et al. (1988)) show positive effects on participants' performance on standardized tests but only small and statistically insignificant effects on dropout rates.

Thus, these programs seem to show positive effects on various aspects of participant behavior but little success in preventing dropping out. Other approaches to providing dropouts (as well as other low-skilled, nonenrolled people) with basic or employment-related skills may show more promise. These include government-funded "human capital" grants, where low-skill people would receive training vouchers and could choose between a variety of public and private modes of skill acquisition. But there is little in the literature to date which carefully evaluates such ideas.[15]

A great deal more evidence exists on what is and is not cost-effective in the realm of more traditional government training programs for disadvantaged workers (e.g., Bassi (1983)). These approaches, as well as more recent attempts to improve the effectiveness of informal job search behavior among these workers, should be considered here as well.[16]

2) Wage Subsidies

A different approach to the problem of low-wage workers involves wage subsidies, paid to either employers or employees. If paid to employers, the subsidy would effectively lower the cost of hiring workers and thereby raise employment. If paid to employees, it will raise the income which they receive per wage dollar. At least in theory, payment to employers or to employees should produce comparable outcomes in the labor market. In the latter case, workers would be more willing to accept low-wage jobs than before, thus enabling employers to reduce their costs. But in reality, legal minimum wages and other constraints on the firm's ability to lower wages for specific groups of workers make the two kinds of payments less comparable. The employer subsidy is therefore regarded as a way of generating higher labor demand and the employee subsidy is often thought of as an income supplement. Either by lowering employer costs or by raising the worker's effective wage, both should tend to raise the demand facing workers and therefore their labor force participation.

The relevant question for government policy is whether the amount of net job creation of a subsidy justifies the budgetary cost of the program. The amount of net job creation depends on the elasticity of labor demand, i.e., the sensitivity of firm hiring decisions to their labor costs. The lower this elasticity, the greater the extent to which an employer wage subsidy would simply represent a windfall to employers whose hiring practices do not change and who merely substitute government finances for their own.

An important related question involves the degree to which a subsidy should be "categorical," or targeted on specific groups such as disadvantaged workers (however defined). Targeting reduces the overall costs and lessens the windfall to employers, but it raises the degree to which subsidized workers may displace non-subsidized workers, especially if their skills are comparable. Targeting also has the disadvantage of creating a stigma for eligible workers, since it signals to the employer that these workers have labor market problems in the absence of the subsidy. The stigma may more than fully counteract the benefits in terms of lower employer costs for hiring these workers.

An intermediate strategy involves subsidies only for "marginal" workers, or for any who are hired above some base level of employment. Such a strategy eliminates some of the windfall problem, since only those hired above the base level are subsidized; and it also limits substitution against unsubsidized workers for the same reason. By focusing on the last group of employees to be hired, this policy should also disproportionately benefit less-skilled employees without the stigma of targeting. This last attribute is reinforced if the subsidy is designed to cover a fixed fraction of wage costs up to some total dollar limit, since this will cover a large fraction of total wage costs for low-wage than for high-wage workers.

The federal government has had experience with both "marginal" and targeted subsidies. The New Jobs Tax Credit (NJTC), began in 1977 but discontinued after 1978, paid 50 percent of the first $6,000 of wages for up to 50 new workers after the firm had reached 102 percent of the previous year's employment. Budgetary costs of the program were under

$2 billion (1977 dollars), and several studies suggest that employment growth in eligible firms (as well as among those who knew about the program at all) was 2-3 percent higher than in comparable firms (Bishop and Haveman (1979), Wachter and Perloff (1979), Bishop, (1981)).

On the other hand, targeted employer subsidy programs for disadvantaged workers had longer lives but smaller effects. The Work Incentive (WIN) program associated with heads of welfare households and the Targeted Jobs Tax Credit (TJTC) are two such programs. Response rates from firms on both have been low (Hamermesh (1978)). Experimental programs on smaller scales have shown similar results (Burtless (1984)), again suggesting a large stigma effect from targeted subsidies.

What does all of this imply for labor force participation of young people? In local labor markets which are now tight and where upward pressure on wages of youth already exists, there is little point in an employer subsidy program. But in states or metropolitan areas where local demand is slack, a marginal worker subsidy focusing only on less-educated youth might be quite cost-effective in raising employment and participation. Complementing this with an employee subsidy for particularly disadvantaged groups would further enhance the labor force effects but would avoid the stigma problem discussed above. In the event of a cyclical downturn over the next few years, the employer subsidy would be especially timely as a means of combatting labor demand problems which always fall disproportionately on the young and/or less-educated (Clark and Summers, 1981).

It is also important to consider federal minimum wage policy in any discussion of subsidies. If the federal minimum is once again raised in the next few years, employer subsidies might tend to offset any negative effects on labor demand which might result. The two policies might therefore be seen as being complementary. On the other hand, the additional employee subsidy for disadvantaged worker may be viewed as a more efficient way of raising their earnings than are large minimum wage increases (though it is also more costly for the Federal Treasury).

Finally, we note the important link that may exist between illegally-obtained income and the participation of low-wage workers in inner-city areas. To the extent that more effective law enforcement can make such activity costlier (in terms of expected arrest) and/or less profitable, positive effects on participation might result. But more specific recommendations in this area are clearly beyond the scope of this paper.[17]

TABLE 1

POPULATION, LABOR FORCE, AND EMPLOYMENT/UNEMPLOYMENT RATES - YOUTH AND OTHERS, 1955-87

Ages 16-19

	White Males				White Females			
	Pop	LFPR	EP	UR	Pop	LFPR	EP	UR
1955	3,507	.586	.520	.113	3,785	.407	.370	.091
1964	5,148	.527	.450	.147	5,468	.378	.322	.149
1972	6,627	.601	.515	.142	6,673	.481	.413	.142
1978	7,022	.650	.563	.135	7,038	.567	.485	.144
1987	6,015	.590	.499	.155	5,924	.565	.490	.134

	Black Males				Black Females			
	Pop	LFPR	EP	UR	Pop	LFPR	EP	UR
1955	---	---	---	---	---	---	---	---
1964	---	---	---	---	---	---	---	---
1972	978	.463	.316	.317	1,040	.322	.192	.405
1978	1,093	.448	.285	.367	1,195	.373	.221	.408
1987	1,065	.436	.285	.344	1,098	.396	.758	.349

Ages 20-24

	White Males				White Females			
	Pop	LFPR	EP	UR	Pop	LFPR	EP	UR
1955	3,074	.856	.804	.070	4,720	.458	.435	.051
1964	4,862	.857	.793	.074	5,706	.488	.454	.071
1972	7,042	.843	.771	.085	7,855	.594	.546	.082
1978	8,335	.872	.806	.076	8,704	.693	.636	.083
1987	7,729	.859	.796	.084	8,079	.748	.693	.074

	Black Males				Black Females			
	Pop	LFPR	EP	UR	Pop	LFPR	EP	UR
1955	---	---	---	---	---	---	---	---
1964	---	---	---	---	---	---	---	---
1972	921	.826	.704	.149	1,106	.571	.469	.179
1978	1,120	.788	.622	.210	1,363	.628	.486	.227
1987	1,173	.778	.621	.203	1,405	.644	.493	.233

NOTE: Pop, LFPR, EP and UR refer to Population, Labor Force Participation Rate, Employment-to-Population Ratio, and Unemployment Rate respectively. Sources are the relevant tables of the Handbook of Labor Statistics and Employment and Earnings.

TABLE 2

SCHOOL ENROLLMENT AND LABOR FORCE PARTICIPATION RATES OF YOUTH, 1955-1987

Ages 16-19

	Males			Females		
	Fraction Enrolled	LFPR - Enrolled	LFPR - Non-Enrolled	Fraction Enrolled	LFPR - Enrolled	LFPR - Non-Enrolled
1955	.640	.392	.929	.487	.230	.581
1964	.739	.335	.874	.688	.233	.565
1972	.718	.401	.872	.652	.346	.621
1978	.693	.471	.886	.658	.440	.693
1987	.621	.433	.770	.600	.442	.670

Ages 20-24

	Males			Females		
	Fraction Enrolled	LFPR - Enrolled	LFPR - Non-Enrolled	Fraction Enrolled	LFPR - Enrolled	LFPR - Non-Enrolled
1955	.181	.417	.967	.061	.420	.486
1964	.238	.480	.966	.109	.378	.518
1972	.277	.533	.949	.161	.500	.627
1978	.243	.554	.946	.193	.583	.721
1987	.217	.568	.931	.200	.608	.761

NOTE: Sources are the same as those of Table 1.

TABLE 3

PARTICIPATION RATES OF NONENROLLED MALES, AGES 16-24, BY EDUCATIONAL ATTAINMENT, 1978 AND 1987

	1978	1987
< 4 Years High School	.865	.768
High School Graduates	.954	.931
1-3 Years College	.952	.940
College Graduates	.968	.967

TABLE 4

A. Males' Median Income by Age, 1972-1986

1972	All Males	Ages: 16-19*	20-24	25-34
All with Income	$17,768	2,402	11,004	21,985
Year-Round, Full-Time Workers	25,133	10,153	16,740	24,635
1986				
All with Income	$17,114	1,928	8,961	19,162
Year-Round, Full-Time Workers	25,894	9,730	14,152	22,692

*Ages 15-19 in 1986.

B. Males' Median Income by Education, 1972 and 1986, Year-Round, Full-Time Workers

1972	8 Years	1-3 Years H.S.	H.S. Grads	1-3 Years College	College Grads
Ages 25 +	$18,753	22,567	26,409	29,641	37,559
Ages 25-34	16,266	19,982	23,628	26,292	30,857
1986					
Ages 25 +	$16,389	20,003	24,701	28,025	36,665
Ages 25-34	12,056	16,165	20,438	23,594	30,162

NOTE: Data are obtained from U.S. Bureau of the Census, Current Population Reports, Series P-60. All figures are in 1986 dollars, with 1972 adjusted by the fixed-weight personal consumption expenditures deflator.

use of relative rather than actual youth wages (since falling youth and adult wages would show no effect).

[6] Some disagreement remains over whether wage growth (as opposed to levels) for the "Baby-Boomers" will allow their wages to converge over time to more normal levels, relative to other cohorts. Welch (1979) and Bloom and Freeman (1986) argue that they will while Berger (1985) argues against this view.

[7] The rather lengthy literature on "deindustrialization" began with Bluestone and Harrison (1983) and was disputed by Lawrence (1984). On the related issue of growing inequality in earnings and family income see Bell and Freeman (1985), Blackburn and Bloom (1985), and Montgomery and Stockton (1987).

[8] According to Brown et al., the elasticity of labor demand for teens with respect to the minimum wage is .1-.2, implying only a small tradeoff between higher minimum wages and employment levels of youth. Montgomery also shows that the negative effects of unions on employment are not large in magnitude.

[9] Median income by race for year-round, full-time workers is not available for all years. Looking at all workers' income would exaggerate the decline in wages for black males, given the dramatic decline in their employment levels over this period.

[10] The argument that recent declines in black youth employment reflect a mismatch of jobs and worker skills caused by declining manufacturing employment is stated in Kasarda (1986) and Wilson (1987).

[11] While government anti-discrimination activity should have shifted out labor demand for blacks, thereby raising both wages and employment,

NOTES

[1] This paper will not cover the general issue of youth unemployment and why its levels are always higher than those of adults. For discussions of these issues, see Osterman (1980) or Ellwood and Feldstein (1982). Important cyclical effects on the youth market, such as those discussed in Clark and Summers (1981), are also ignored in this discussion of secular trends. Finally, the analysis below assumes that labor force participation is a meaningful and measurable category, thus abstracting from the unemployment/nonemployment issue stressed by Clark and Summers in their other work (1979).

[2] Unemployment rates for adult males (ages 20 and above) in the five years listed are 3.8, 3.9, 4.0, and 4.2 percent respectively for 1955, 1964, 1972, and 1978. For married males, they are 2.6, 2.8, 2.8, and 2.8 percent respectively.

[3] Separate rates for blacks in the pre-1972 years by age are not available in the published annual data.

[4] Throughout this paper, "youth" will refer to teens (ages 16-19) and those aged 20-24 unless otherwise indicated.

[5] Gustman and Steinmeier estimate the effects of being in any of four relative (i.e., youth-to-adult) wage categories on joint probabilities of enrollment and participation. They find that moving from the lowest to the highest relative wage category (which more than doubles the relative wage) raises nonenrollment and participation rates of young white males by 7-20 percent (and slightly less for black males), though participation rates conditional on nonenrollment would rise by less. These increases may be seriously biased downwards by the

it is possible that they have raised wages of blacks at the expense of employment. A more plausible argument is that labor demand has risen for some blacks (i.e., those with education and skills) and declined for others (for reasons discussed in the text).

[12] The view that black male unemployment is responsible for low marital rates and high female headship among black households is disputed by Bassi (1987), among others.

[13] The literature on employee job search focuses on unemployment rather than participation. See Mortensen (1986) for a review of this literature.

[14] The argument that relative reservation wages are higher for blacks is disputed by Borus (1982), though he presents no data on market wages. Various Manpower Development Research Corporation (MDRC) publications also dispute this viewpoint on the basis of the ease with which minimum wage jobs in government programs are filled. This, however, does not contradict the notion that large segments of the black and white youth populations are unwilling to accept these jobs.

[15] Proposals for a voucher system in which young people would be able to purchase the remedial education or training of their choices appear, for example, in Haveman (1988). A few states, such as Michigan, are initiating comprehensive programs designed to evaluate and identify particular skill deficiencies of individual adults in the population and to direct them to appropriate remedial services. Apprenticeship programs, in which youth are trained for specific skills at low wages, have never been widely used outside of unionized construction, though

government subsidies for such programs more generally might be considered.

[16] Programs which aid disadvantaged workers in the job search process have recently been included in many statewide programs for AFDC recipients (Gueron (1986)), though their specific effects have not been frequently evaluated.

[17] Even the general direction of policies to achieve such a goal are unclear. For instance, the apparently growing importance of the high-price, illegal drug traffic has led some public officials to argue for legalization rather than stricter law enforcement. I defer to others with greater expertise in these matters.

REFERENCES

Anderson, Elijah. "Some Observations on Black Youth Unemployment," in J. Palmer and I. Sawhill eds. Youth Employment and Public Policy, Prentice Hall, 1980.

Bell, Linda and Richard Freeman. "The Facts About Rising Industrial Wage Dispersion in the U.S." IRRA Proceedings, 1986.

Ballen, John and Richard Freeman. "Transitions between Employment and Unemployment," in R. Freeman and H. Holzer eds. The Black Youth Employment Crisis, University of Chicago Press, 1986.

Bassi, Laurie. "Changing Family Structure: Economic Choice or Economic Constraint?" Mimeo, 1987.

Bassi, Laurie. "The Effect of CETA on the Post-Program Earning of Participants, Journal of Human Resources, Fall 1983.

Bound, John and Richard Freeman. "Black Economic Progress: Erosion of the Post-1964 Gains in the 1980's?" Mimeo, 1987.

Beach, Charles. "The Vanishing Middle Class? Evidence and Explanations," Institute for Research on Poverty Discussion Paper, 1988.

Berger, Mark, "Changes in Labor Force Composition and Male Earnings: A Production Approach," Journal of Human Resources, Spring 1983.

Berger, Mark. "The Effect of Cohort Size on Earnings Growth: A Reexamination of the Evidence," Journal of Political Economy, June 1985.

Bishop, John. "Employment in Construction and Distribution Industries: The Impact of the New Jobs Tax Credit," in S. Rosen ed. Studies in Labor Markets, University of Chicago Press, 1981.

Bishop, John and Robert Haveman. "Selective Employment Subsidies: Can Okun's Law be Repealed?" American Economic Review, May 1979.

Blackburn, McKinley and David Bloom. "Family Income Inequality in the United States: 1967-1984." IRRA Proceedings, 1986.

Bloom, David and Richard Freeman. "The Youth Problem: Age or Generational Crowding?" NBER Working Paper, 1986.

Bluestone, Barry and Bennett Harrison. The De-Industrialization of America, 1983.

Borjas, George. "The Demographic Determinants of the Demand for Black Labor," in R. Freeman and H. Holzer eds. The Black Youth Employment Crisis, 1986.

Borus, Michael. "Willingness of Youth to Work," Journal of Human Resources, 1982.

Bound, John and George Johnson. "Changes in the Structure of Wages During the 1980's: An Evaluation of Alternative Explanations," Unpublished, 1989.

Bowen, William and T. Aldrich Finegan. The Economics of Labor Force Participation, Princeton University Press, 1969.

Brown, Charles et al. "The Effect of the Minimum Wage on Employment and Unemployment," Journal of Economic Literature, June 1982.

Burtless, Gary. "Are Targeted Wage Subsidies Harmful? Evidence from a Wage Voucher Experiment," Industrial and Labor Relations Review, October 1985.

Cain, Glen. "Black-White Differences in Employment of Young People: An Analysis of 1980 Census Data," Institute for Research on Poverty Discussion Paper, 1989.

Cain, Glen and Ross Finnie. "The Black-White Difference in Youth Employment: Evidence for Demand-Side Factors," IRP Discussion Paper, 1987.

Clark, Kim and Lawrence Summers. "The Dynamics of Unemployment Reconsidered," _Brookings Papers on Economic Activity_, 1979.

Clark, Kim and Lawrence Summers. "Demographic Differences in Cyclical Employment Variation," _Journal of Human Resources_, Winter 1981.

Cogan, John. "The Decline in Black Teenage Employment: 1950-70," _American Economic Review_, September 1982.

Datcher-Loury, Linda and Glen Loury. "The Effects of Attitudes and Aspirations on the Labor Supply of Young Men," in Freeman and H. Holzer eds. _The Black Youth Employment Crisis_, 1986.

Dooley, Martin and Peter Gottschalk. "Earnings Inequality Among Males in the United States: Trends and the Effects of Labor Force Growth," _Journal of Political Economy_, February 1984.

Ehrenberg, Ronald and Alan Marcus. "Minimum Wages and Teenagers' Enrollment and Employment," _Journal of Human Resources_, Winter 1982.

Ellwood, David. "Teenage Unemployment: Permanent Scars on Temporary Blemishes?" in R. Freeman and D. Wise eds. _The Youth Labor Market Problem_, University of Chicago Press, 1982.

Ellwood, David. "The Spatial Mismatch Hypothesis: Are There Jobs Missing in the Ghetto?" in R. Freeman and H. Holzer eds. _The Black Youth Employment Crisis_, 1986.

Ellwood, David and Martin Feldstein. "Teenage Unemployment: What is the Problem?" In R. Freeman and D. Wise eds. The Youth Labor Market Problem, 1982.

Ellwood, David and David Wise. "Youth Employment in the Seventies: The Changing Circumstances of Young Adults," NBER Working Paper, 1983.

Freeman, Richard. The Market for College-Trained Manpower, Harvard University Press, 1971.

Freeman, Richard. "The Decline in Economic Rewards to College Education," Review of Economics and Statistics, February 1977.

Freeman, Richard. "The Effects of Demographic Factors on Age-Earnings Profiles," Journal of Human Resources, Summer 1979.

Freeman, Richard. "Black Economic Progress Since 1964: Who Has Gained and Why," in S. Rosen ed. Studies in Labor Markets, University of Chicago Press, 1981.

Freeman, Richard. "Economic Determinants of Individual and Geographic Variation in the Labor Market Positions of Young Persons," in R. Freeman and D. Wise eds., The Youth Labor Market Problem, 1982.

Freeman, Richard. "Crime and the Labor Market," in J.Q. Wilson ed. Crime and Public Policy, Institute for Contemporary Studies, 1983.

Freeman, Richard. "Who Escapes? The Relation of Church-Going and Other Background Factors to the Performance of Black Male Youths," in R. Freeman and H. Holzer eds. The Black Youth Employment Crisis, 1986.

Freeman, Richard. "How do Young, Less-Educated Workers Fare in a Labor Shortage Economy?" Mimeo, 1988.

Ferguson, Ronald and Randall Filer. "Do Better Jobs Make Better Workers? Absenteeism for Work Among Inner-City Black Youths," in R. Freeman and H. Holzer eds., The Black Youth Employment Crisis, 1986.

Grant, James and Daniel Hamermesh. "Labor Market Competition Among Youths, Women and Others," Review of Economics and Statistics, 1981.

Gueron, Judith. "Lessons From a Job Guarantee: The Youth Incentive Entitlement Pilot Projects," Manpower Development Research Corporation, 1984.

Gueron, Judith. "Work Initiatives for Welfare Recipients," Manpower Development Research Corporation, 1986.

Gustman, Alan and Thomas Steinmeier. "Wages, Unemployment, and the Enrollments of Youth," Review of Economics and Statistics, November 1981.

Haveman, Robert. Starting Even, Twentieth Century Fund, 1986.

Hamermesh, Daniel. "Subsidies for Jobs in the Private Sector," in J. Palmer ed. Creating Jobs, Brookings, 1978.

Holzer, Harry. "Black Youth Unemployment: Duration and Job Search," in R. Freeman and H. Holzer eds. The Black Youth Employment Crisis, 1986a.

Holzer, Harry. "Informal Job Search and Black Youth Unemployment," American Economic Review, June 1987.

Holzer, Harry. "Reservation Wages and Their Labor Market Effects for Black and White Male Youth," Journal of Human Resources, June 1986b.

Holzer, Harry. "Unions and the Labor Market Status of White and Minority Youth," Industrial and Labor Relations Review, April 1982.

Ihlanfeldt, Keith and David Sjoquist. "Job Accessibility and Racial Differences in Youth Employment Rates," Unpublished, 1989.

Jackson, Peter and Edward Montgomery. "Layoffs, Discharges, and Youth Unemployment," in R. Freeman and H. Holzer eds. The Black Youth Employment Crisis, 1986.

Jencks, Christopher. "Deadly Neighborhoods," The New Republic, June 13, 1988.

Kasarda, John. "The Regional and Urban Redistribution of People and Jobs in the U.S." Mimeo, 1986.

Kim, Choongsoo. "On the Determinants of Reservation Wages: An Empirical Specification," Center for Human Resource Research, Ohio State University, 1981.

Lawrence, Robert. Can America Compete? Brookings, 1984.

Lerman, Robert. "Do Welfare Programs Affect Schooling and Work Patterns of Young Black Men?" in R. Freeman and H. Holzer eds. The Black Youth Employment Crisis, 1986.

Leonard, Jonathan. "The Impact of Affirmative Action on Employment," Journal of Labor Economics, October 1984.

Leonard, Jonathan. "Space, Time, and Unemployment: Los Angeles, 1980," Mimeo, 1985.

Levy, Frank. Dollars and Dreams, Russell Sage Foundation, 1987.

Mare, Robert and Christopher Winship. "Racial Socioeconomic Convergence and the Paradox of Black Youth Joblessness," NORC, 1983.

Mattila, J. Peter. "Youth Labor Markets, Enrollment, and Minimum Wages," IRRA Proceedings, 1978.

McElroy, Marjorie. "The Joint Deterioration of Household Membership, and Market Work: The Case of Young Men," Journal of Labor Economics, July 1985.

Meyer, Robert and David Wise. "High School Preparation and Early Labor Market Experience," in R. Freeman and D. Wise eds. The Youth Labor Market Problem, 1982a.

Meyer, Robert and David Wise. "The Transition for School to Work: The Experiences of Blacks and Whites," NBER Working Paper, 1982b.

Montgomery, Edward. "Employment and Unemployment Effects of Unions," Journal of Labor Economics, April 1989.

Montgomery, Edward and David Stockton. "Evidence on the Causes of Rising Dispersion of Relative Wages," Mimeo, 1987.

Mortensen, Dale. "Job Search and Labor Market Analysis," in O. Ashenfelter and R. Layard eds. Handbook of Labor Economics, North Holland, 1986.

Murphy, Kevin and Finis Welch. "The Structure of Wages," UNICON Discussion Paper, 1988.

Perloff, Jeffrey and Michael Wachter. "The New Jobs Tax Credit: An Evaluation of the 1977-78 Wage Subsidy Program," American Economic Review, May 1979.

Rees, Albert and Wayne Gray. "Family Effects in Youth Employment," in R. Freeman and D. Wise eds. The Youth Labor Market Problem, 1982.

Sipe, Cynthia et al. "Summer Training and Education Program: Report on the 1987 Experience," Public/Private Ventures, 1988.

Smith, James and Finis Welch. Closing the Gap, 1987.

Stapleton, David and Douglas Young. "Educational Attainment and Cohort Size," Journal of Labor Economics, July 1988.

Viscusi, W. Kip. "Market Incentives for Criminal Behavior Among Inner-City Black Youth," in R. Freeman and H. Holzer eds. The Black Youth Employment Crisis, 1986.

Wachter, Michael and Choongsoo Kim. "Time-Series Changes in Unemployment of Teenagers," in R. Freeman and D. Wise eds. The Youth Labor Market Problem, 1982.

Welch, Finis. "Effects of Cohort Size on Earnings: The Baby-Boom Babies' Financial Bust," Journal of Political Economy, 1979.

Welch, Finis. "The Employment of Black Men," Journal of Labor Economics, forthcoming in 1989.

Williams, Donald. Labor Force Participation of White and Black Male Youth, UMI Press, 1984.

Wilson, William. The Truly Disadvantaged, Prentice-Hall, 1986.

22. LABOR FORCE PARTICIPATION AMONG THE ECONOMICALLY DISADVANTAGED

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22. LABOR FORCE PARTICIPATION AMONG THE ECONOMICALLY DISADVANTAGED

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I. INTRODUCTION

Over the last few years there has been a resurgence of concern with the problems of the disadvantaged in the U.S. Much of the reason for this resurgence lies in the persistence of problems of low income, high unemployment rates, and high rates of welfare dependency among the disadvantaged. Much of the persistence of problems is also a result of the low growth rates of real wages in the U.S. labor market over the 1970s and early 1980s, but this is not the sole source of the problem. The problems facing the disadvantaged have, indeed, accelerated in their severity for reasons still not fully understood.

Several statistical trends form the basis for the evidence of growing problems among the disadvantaged. Chief among the pieces of evidence is that indicating an increase in the poverty rate starting in the late 1970s and continuing in the 1980s. The U.S. poverty rate fell from 1969 to 1979 from 12.1 percent to 11.7 percent, but rose by 1986 to a level higher than in 1969, of 13.6 percent. This increase has arisen not from a decline in transfer payments or from a decline in other sources of unearned income, but instead from a decreases in real earnings in the labor market among the least-skilled groups in the society. A second piece of evidence that supports this view is that which shows growing wage inequality in the U.S. labor force, at least among men. Part of this increase in inequality has been the result of an increase in the relative number of high earners in the labor force, but the relative number of low earners has also grown. A third piece of evidence, more directly leading into the concerns of this review, relates to the labor force attachment of young, less-educated men. For such men the rates of labor participation have fallen over the 1970s and 1980s and the rates for non-participation have risen for both black and white men, but much more so for the former. Similar trends have occurred for older men and for more educated men, but the magnitudes involved are smaller than for less-educated youth.

This review is focused on the ability of public policy to increase labor force attachment among the disadvantaged. Specifically, a number of different types of policies that have been attempted in the past to increase that attachment are reviewed. The research evidence in support of each is surveyed and the findings of that research are summarized.

Several different types of public policies are reviewed. First, policies for reform of the U.S. welfare system, of which there have been many, are surveyed. Second, public policy on reform of the child-support system is reviewed, since such policy has a close connection to welfare reform and to the labor-force problems of the disadvantaged in general. Third, evidence on the effects of human-capital-inducing programs for the training of the disadvantaged, including those programs requiring welfare recipients to work, are discussed. Fourth, programs for the subsidization of wage rates and earnings are surveyed. Fifth, policies aimed at subsidization of child care for working families are reviewed and evaluated. On the basis of the review of these policies, several policy recommendations are made in the final section of the review.

II. BACKGROUND

In this section the background literature on trends in poverty, earnings inequality, and labor force status of the unskilled population will be reviewed. Table 1 shows recent trends in the U.S. poverty rate. The overall poverty rate in the U.S. dropped enormously during the 1960s but much less so in the slow-growth 1970s. By the late 1970s the poverty rate had begun to rise again and, by 1986, it had reached a level (13.6 percent) exceeding even that it had had in 1969 (12.1 percent). These overall changes in poverty mask considerable differences by demographic group. For the elderly, for example, poverty rates continued to drop after the 1960s all the way up to 1986. Much of the favorable situation of the elderly is the result of gains in real Social Security benefits over the period. But for both adults as a whole and for children, poverty rates increased even from 1969 to 1979, and continued to do so in the 1980s.

Female-headed families, who constitute an increasing percent of the poverty population, experienced trends in poverty similar to those of the national average--falling considerably during the 1960s but rising in the 1980s. Similar trends occurred for other families. But unrelated individuals have had continuing drops in poverty, underscoring the location of poverty rate increases as occurring in families. In any

Table 1

Poverty Rates by Demographic Group (%)

	1959	1969	1979	1986
Total	22.4	12.1	11.7	13.6
Age				
Elderly	35.2	25.3	15.2	12.4
Adult	17.1	8.7	8.9	10.8
Children	27.3	14.0	16.4	20.5
Household Status				
Female-Headed Family	49.4	38.2	34.9	38.3
All Other Families	18.2	7.4	6.3	7.3
Unrelated Individuals	46.1	34.0	21.9	21.6
Race/Ethnicity				
White	18.1	9.5	9.0	11.0
Black	55.1	32.2	31.0	31.3
Spanish Origin	n.a.	n.a.	21.8	27.3

Source: Sawhill (1988).

n.a. = not available.

case, because the number of female heads has increased so drastically over the 1970s and 1980s, the poverty population is increasingly "feminized."

Important differences in poverty rate trends appear by race and ethnicity as well. Poverty rates for whites followed the same trend as the national average, but those for blacks did not. Black poverty rates fell tremendously during the 1960s, by a larger absolute amount than for any other group in the table (from 55 percent to 32 percent). However, while poverty rates for the black population have not risen subsequent to the 1960s as the overall rate has, they have not continued to fall as well. Instead, they have stagnated and remained more or less constant at around 31 to 32 percent. These rates are still, of course, extremely high compared to those of whites. For those of Spanish origin, we unfortunately have data only for the 1980s, where it appears that poverty rates for the group have risen. The levels of their rates are slightly below those of blacks.

Sawhill (1988), in a review of the causes of the recent upward trend in poverty rates, points out that they have resulted from a decrease in real forms of unearned income to the low-skilled population, especially real government transfer payments, accompanied by a reduction in real earnings in that group. Tables 2 and 3 demonstrate this by showing trends in the distribution of earnings in the U.S. from 1967 to 1986. Table 2 shows that the fraction of the male workforce with earnings less than 50 percent of the median has risen steadily. The fraction of the workforce in the middle range has fallen much more,

Table 2

Percent of Jobs by Annual Earnings Category: Male Wage and Salary Workers

	Low	Middle	High
Year	Less than 50% of median	More than 50% and less than 150% of median	More than 150% of median
1967	24.9	53.5	21.6
1968	24.2	55.0	20.9
1969	24.5	55.2	20.3
1970	24.6	55.3	20.1
1971	25.2	52.8	22.0
1972	25.6	52.8	21.6
1973	25.3	52.6	22.1
1974	25.6	50.6	23.8
1975	25.8	49.4	24.8
1976	26.6	48.4	25.0
1977	26.5	47.7	25.8
1978	26.3	48.2	25.5
1979	25.9	47.0	27.1
1980	26.2	47.7	26.1
1981	26.4	45.6	28.0
1982	26.8	44.1	29.0
1983	27.7	43.0	29.2
1984	27.2	44.4	28.3
1985	27.1	43.8	29.1
1986	26.5	44.3	29.2

Source: Kosters and Ross (1988).

however, reflecting a very strong growth in the upper tail of the earnings distribution as well.

Why there has been an increase in the inequality of the earnings distribution, particularly that at the bottom end, is the subject of continuing research. It does not appear to be the result of changes in hours of work but rather of hourly wage rates; nor does it appear to reflect a change in the industrial structure of the economy as, for example, would be expected from the decline in the manufacturing sector (Blackburn and Bloom, 1987). One hypothesis suggested by some analysts is that the increase in the trade deficit has hurt low-skilled workers more than high-skilled (Murphy and Welch, 1988). Continuing research in this area is underway at the moment and may reveal some other causes of the trend. Interestingly, a similar growth of low-wage workers has not occurred among women in the U.S., as Table 3 shows. There has instead been a decline in the percent of the female workforce with low-earnings, accompanied by a rise in the middle-earnings workforce and essentially no change in the upper-earnings portion. The difference is no doubt connected to the difference in labor force growth patterns for men and women over the last twenty years, for there has been much more educational and occupational upgrading for women than for men.

Table 4 shows more directly the trends in the labor force status of unskilled groups, those of low age and education (the table shows rates of non-employment). The most serious difficulties have arisen among young black men. Among such men with less than a high school education, the fraction not working has risen from approximately 20 percent in 1940 to 26 percent in 1960, and to an enormous 50 percent in 1980. Even

Table 3

Percent of Jobs by Annual Earnings Category: Female Wage and Salary Workers

	Low	Middle	High
Year	Less than 50% of median	More than 50% and less than 150% of median	More than 150% of median
1967	33.9	34.3	31.8
1968	34.0	33.4	32.6
1969	33.4	34.5	32.1
1970	32.7	34.2	33.1
1971	33.2	33.8	33.0
1972	32.5	33.9	33.6
1973	32.7	34.6	32.8
1974	31.7	36.1	32.3
1975	32.3	35.3	32.4
1976	31.7	36.0	32.3
1977	31.3	36.5	32.2
1978	30.6	38.6	30.8
1979	31.2	38.9	29.9
1980	30.2	40.4	29.5
1981	30.1	40.0	29.9
1982	31.0	39.5	29.5
1983	30.2	38.3	31.6
1984	30.2	38.5	31.3
1985	29.6	38.6	31.5
1986	30.5	38.4	31.2

Source: Kosters and Ross (1988).

Table 4

Percentage of Population Not Employed or Enrolled in School, By Schooling Level

	1940	1950	1960	1970	1980
Ages 20-24: Black Men					
0-11 Years	19.8	18.9	25.9	34.7	50.2
12 Years	20.6	17.9	19.6	21.7	28.2
13-15 Years	14.5	9.6	9.3	10.8	13.3
16 or More Years	6.3	8.3	3.0	5.1	6.8
All Education Levels	19.5	18.0	22.2	24.5	29.7
Ages 20-24: White Men					
0-11 Years	20.8	13.8	17.9	20.9	28.8
12 Years	15.5	8.3	7.8	10.6	14.4
13-15 Years	10.4	4.6	4.4	5.2	5.1
16 or More Years	8.6	3.3	2.7	3.2	3.0
All Education Levels	17.6	9.9	9.9	9.7	12.3
Ages 35-44: Black Men					
0-11 Years	15.6	14.4	19.1	18.8	27.8
12 Years	19.7	15.5	13.2	11.7	18.8
13-15 Years	14.7	13.0	12.4	8.7	13.3
16 or More Years	5.3	6.0	4.4	2.9	7.7
All Education Levels	15.6	14.3	17.5	15.5	20.5
Ages 35-44: White Men					
0-11 Years	11.8	8.3	10.8	10.7	18.4
12 Years	7.5	4.7	4.2	4.5	7.5
13-15 Years	6.7	4.7	3.7	4.5	5.2
16 or More Years	3.9	3.2	2.1	2.3	2.6
All Education Levels	10.3	6.8	7.0	6.3	7.9

Source: Welch (forthcoming).

young black men with a high school degree have experienced increases in nonwork which have risen in the 1970s up to 28 percent by 1980. Some deterioration has even occurred for those in the young black male population with a college degree. Similar trends but much smaller in magnitude have occurred for young white men. While such men with a high school degree or less have experienced increasing rates of nonwork over the 1970s and 1980s, their rates of increase as well as absolute levels are considerably below those of young black men. In addition, young white men with at least some college or with a college degree have experienced no deterioration in the 1970s.

Among older black and white men, similar problems have arisen even though the levels of nonwork are, as should be expected, far below those of young men. However, some differences appear. For example, the nonwork rates of older black men fell during the 1960s at all education levels, unlike those of young men. It was not until the 1970s that their situations worsened. Also, it appears that among older white men, those with some college or a college degree experienced deteriorations in their labor market status over the 1970s, unlike young white men.

Table 5 shows more recent trends in labor force participation for black and white individuals since 1980. Participation rates of individuals with less than a high school degree have stabilized over the 1980s, probably as a result of the strong economic recovery during the period. However, while white high school graduates have improved their labor force participation, that of black high school graduates has continued to drop. Thus the problem has continued in the 1980s.

Table 5

Labor Force Participation Rates of Persons 25 to 44 Years of Age by Education and Race, 1980-1987

				College	
	Total	Less than 4 Years of High School	4 Years of High School Only	1 to 3 Years	4 Years or More
White					
1980	74.2	61.4	73.7	79.2	86.0
1981	74.9	62.1	74.2	79.8	86.6
1982	75.0	61.3	74.3	79.3	87.1
1983	75.1	60.9	74.1	79.4	86.9
1984	75.8	60.9	74.7	80.0	87.5
1985	76.6	60.7	75.8	81.1	87.7
1986	76.7	61.2	75.7	80.8	87.6
1987	77.5	61.6	76.6	81.6	88.2
Black					
1980	71.5	58.1	79.2	82.0	90.1
1981	72.0	58.7	79.1	81.1	89.2
1982	72.8	59.7	76.6	84.8	91.6
1983	73.2	58.4	78.1	84.5	91.6
1984	74.0	59.3	77.8	85.8	90.8
1985	73.4	57.0	77.2	85.6	89.9
1986	74.7	57.7	78.4	84.8	91.7
1987	74.7	58.8	77.6	84.5	90.4

Source: U.S. Department of Labor (1988, Table C-23).

The deterioration of the labor market situation of young men, especially young black men, ranks as one of the most serious problems, if not the most serious problem, in the unskilled labor market in the U.S. In research on the problem, there have been three major perspectives expressed on the causes of the deterioration. The first two are the polar economic views that ascribe the problem to supply-side factors, on the one hand, and demand-side factors, on the other. The supply-side view is best expressed by Welch (forthcoming), who has pointed out (as others have) a puzzle in the statistics, for they show an increase in the earnings of black males relative to white males over the 1970s and 1980s but, as just noted, a decrease in relative labor force participation. Thus, those black males with a job are improving relative to whites but fewer black males have earnings in the first place. Welch hypothesizes that the resolution to the puzzle is that the economic rewards to criminal and other illegal activities in low-income neighborhoods have increased even more than the potential labor market earnings for youth in those neighborhoods. However, Welch provides no direct evidence that this is the case.

The demand-side view is best expressed by Cain and Finnie (forthcoming), who argue that there has been a deterioration in the demand for the labor of low-skilled youth in urban areas. The evidence Cain and Finnie provide is based upon an examination of the correlation between unemployment rates of white and black youth in different metropolitan areas in the U.S. Cain and Finnie find that the unemployment rates for the two groups are indeed strongly positively correlated. Assuming that the unemployment rate of white youth is relatively unaffected by discrimination and other cultural factors that affect black youth, this implies that a lower general demand for labor (i.e., a higher unemployment rate for white youth) has a major effect on black youth as well. Thus, the black-white difference cannot be solely due to cultural or other sociological differences.

The third view is that expressed by the sociologist William Julius Wilson (1987) on the development of an urban "underclass." For Wilson, the underclass exists in the urban ghetto, low-income neighborhoods plagued by high unemployment and welfare dependency and by other indicators of social ills--drugs, crime, other illegal activity, female-headness, and poverty. This particular definition of the underclass is to be distinguished from older definitions that had no spatial dimension, for example, those based upon persistence of low income or intergenerational transmission of poverty (Levy, 1977). The problem as identified by Wilson is multifaceted but focuses particularly on the problems created by the departure from urban inner city neighborhoods of middle-income blacks. The remaining population is more uniformly disadvantaged and hence poverty becomes more concentrated. It is Wilson's thesis that the concentration of poverty, per se, in urban inner city neighborhoods has an independent contributory effect on the problems of inner city individuals and families, one problem being the low levels of labor force attachment and earnings with which this review is concerned. The independent effect arises because such neighborhoods provide dysfunctional role models for youth and because community standards created by such ghettos create a culture not conducive to social improvement.

To date much of the research on the underclass has concerned itself with identifying its magnitude (see Sawhill, 1988, for a review). Unfortunately, different definitions have been used so the size of the underclass has ranged from less than 1 million to 10-11 million. However, it has been established that the underclass is not large in numbers regardless of definition. Only 7 per-cent of the poverty population lives in a low-income area, although it is also true that 70 percent of this population is black. Nevertheless, only 15 percent of the black poverty population lives in such areas. Still, despite its small size, all indications are that the fraction of the poverty population living in concentrated-low-income areas has been growing over time.

Regardless of the theory of the causes of the problems of disadvantaged youth, particularly black youth, what are the appropriate policy responses to the problem? Neither Welch nor Cain and Finnie directly address this issue, although presumably Welch would advocate increased activity against crime and other illegal activity and Cain and Finnie would advocate increased demand stimulation for disadvantaged youth. Wilson, on the other hand, devotes considerable attention to policy alternatives. He argues that anti-discrimination and Affirmative Action policies of the past are not adequate policy responses to the problems of urban underclass neighborhoods. Instead, he argues, such policies have assisted the black middle class to improve their situation and to leave inner city low-income neighborhoods altogether, leaving behind neighborhoods in which poverty is increasingly concentrated. On the other hand, Wilson does not advocate solely local, neighborhood-level policy programs to alleviate the problem. Instead, he advocates universalist policies such as child support, job training, child-care subsidization, and other such policies.

These policies will be reviewed in the subsequent sections of this paper, where each policy will be assessed in light of its potential effectiveness in addressing the labor problems of the disadvantaged. The existing set of policies in place in the U.S. will also be reviewed. The major conclusion of the review will be that the existing set of policies for low-income individuals in the U.S. is overwhelmingly focused on the problems of women, and that policies to assist men are greatly underprovided.

III. EFFECTS OF PUBLIC POLICIES

A. Reform of the U.S. Welfare System

There has been an enormous amount of research on the U.S. welfare system and on ways in which it could be altered to better encourage work and earnings among the disadvantaged, while at the same time maintaining the income support that is the purpose of the system. One recently popular method is by the introduction of "workfare" or training programs for welfare recipients. Such programs will be discussed separately in the next section. Here attention will be restricted to more traditional reforms of the system that have been discussed over the 1960s and 1970s, namely, (1) changing the benefit-reduction rate on earnings, (2) extending benefits to cover the working poor, and (3) extending benefits to cover husband-wife families.

The U.S. welfare system for the poor and disadvantaged consists of several parts, but the core is that constituted by the Aid to Families with Dependent Children (AFDC) program, the Food Stamp program, and Medicaid. The major component of the AFDC program is that which offers monthly cash benefits to female heads of family with children under the age of 18 if their income and assets are below certain eligibility levels. However, about half of the states offer AFDC benefits to husband-wife families if the principal earner (usually the husband) is unemployed, has a history of significant labor force attachment similar to that required for eligibility in the unemployment insurance system, and if the family meets the same income and asset eligibility requirements as those for regular AFDC. Nevertheless, because the eligibility requirements are so severe, only about 7 percent of the AFDC caseload is composed of such "AFDC-UP" families. Consequently, the AFDC program remains overwhelmingly a program for female heads of family. This may change somewhat in the future, for the Family Support Act of 1988 mandates that all states must offer at least six months of AFDC-UP benefits each year by 1990.

The Medicaid program provides medical services to families in need of such care. However, aside from the elderly and the disabled, the major eligibility group for Medicaid is once again female heads of family. AFDC recipients are automatically eligible for Medicaid benefits but low-income families off AFDC rarely are. An exception arises in the 38 states that offer a "Medically Needy" program, under whose rules a female-headed family with a serious medical problem can become eligible for benefits provided they use up most of their existing assets (i.e., "spend them down," in the program language) and become, effectively, poor. Consequently, few such families receive benefits relative to those in the AFDC caseload.

The Food Stamp program is the only universal program in the nation, for its eligibility requirements are based only upon low-income and asset status, not any family or demographic characteristic or marital status. The Food Stamp program today is an extremely large program, one whose caseload is double that of AFDC. As a result of its universal eligibility, almost 16 percent of its recipients are low-income husband-wife families. Nevertheless, the largest recipient group in the Food Stamp program is still that of female heads of family, who constitute almost 30 percent of the caseload. Part of the explanation for their predominance is their low level of income, but it is also the case that involvement with one form of the welfare system (AFDC) generally is highly positively related to involvement with other forms as well. In any case, however, although Food Stamp recipiency is widespread among both female heads and low-income husband-wife families, its benefits are approximately 50 percent lower than those of the AFDC program. Consequently, the Food Stamp program does not have as great an impact as its larger caseload would suggest.

It should also be noted in passing that neither of the major social insurance programs in the U.S., Unemployment Insurance and Social Security, provides significant assistance to the prime-age able-bodied poor, either female head or married men and women. Both provide benefits based upon prior earnings and labor force history, particularly the unemployment insurance program, which rules out eligibility for the most disadvantaged segments of the labor force.

The overall distributions of transfer benefits among female headed and husband-wife couples are shown in Table 6. For female heads, more than half receive some form of transfer and over one-quarter receive AFDC, Medicaid, and Food Stamps together. However, for two-parent families, less than one-fifth receive any transfer at all. Of those who do, more than half receive some form of cash transfer or other transfer (usually unemployment insurance) rather than a low-income benefit, per se. The small impact of the AFDC-UP program shows up in the minuscule portions of such families receiving AFDC.

This review of the U.S. transfer system should make it clear that minor reforms in the existing system can have at most only a small impact on labor force participation and earnings of the disadvantaged as a whole, for the reason that most males and husband-wife families are ineligible for significant benefits. Only the Food Stamp program provides such benefits to husband-wife families and single individuals, but the program is not important enough in the incomes of those recipients to provide much leverage in increasing labor force attachment. Thus, programs for changing the benefit structure of the existing system cannot be expected to have any significant impact.

In addition to this conclusion, some policies for improving work incentives in the existing system would have little effect on female heads, their primary eligibility group. Two of the long-standing reforms of the transfer system designed to encourage work--lowering the

Table 6

Benefit Receipt by Family Type, 1984
(percentage distribution)

	Nonelderly Single-Parent Families	Nonelderly Two-Parent Families
No program	44.5	81.8
Food Stamps only	3.6	1.9
Medicaid only	1.1	0.9
AFDC, Medicaid only	2.3	0.6
Food Stamps, Medicaid only	0.5	0.3
AFDC, Medicaid, Food Stamps only	15.4	1.2
AFDC, Medicaid, Food Stamps, and other benefit	11.0	0.5
AFDC, Medicaid, and other benefit (not Food Stamps)	1.0	0.3
Cash transfers only[a]	9.7	7.6
Housing assistance only	3.3	0.9
Other	7.6	4.0
Total	100.0	100.0

Source: Weinberg (1986, Tables 3 and 4) and unpublished data provided by D. Weinberg.

[a] Includes unemployment insurance, general assistance, and other cash programs.

benefit-reduction rate on earnings in general and extending benefits to the working poor--have been shown by research in the area to have little if any impact on earnings and labor force attachment of the low-income welfare-eligible population, if not a deleterious effect (Levy, 1979; Moffitt, 1986). Lowering the benefit-reduction rate--that is, not reducing welfare benefits as much when the recipient earns more money in the labor market--does indeed encourage work effort among those initially on the welfare rolls. Unfortunately, it also raises the income eligibility level for the program because recipients with moderately high levels of earnings can now continue to receive benefits. But this makes families who already had such levels of earnings newly eligible for the program and hence provides work disincentives to that new group. Likewise, providing benefits to the working poor gives the existing non-working poor an incentive to work, but it also provides benefits to some families who had not been recipients at all before, providing them with a new work disincentive. The conclusion to be drawn from this research is that such reforms will not only have no effect on the labor market position of low-income men in the U.S., they probably will have no effect on that of female heads as well.

One solution to removing the focus of the existing welfare system on female heads would be to extend benefits to husband-wife families. As mentioned above, such benefits are already provided under the AFDC-UP program in half the states, and the other half will be required under the 1988 Family Support Act to provide such a program for at least six months out of the year in the future. As noted previously, however, the eligibility requirements in the existing AFDC-UP program would have to be relaxed to make it generally available to low-income husband-wife families. An additional effect of such an extension that is potentially much more important is that which would arise from a higher marriage rate in the low-income population. The current research evidence on the effects of AFDC on marital status indicates that the program does indeed delay rates of first marriage and remarriage and increase rates of divorce and separation (Danziger et al., 1984; Ellwood and Bane, 1985; Hoffman and Duncan, 1988). While the magnitudes of the effects estimated thus far are not large, their force is nevertheless to decrease the labor force attachment of low-income men--a sizable body of research evidence indicates that married men have higher levels of attachment and higher earnings levels than unmarried men (Killingsworth, 1984). Thus, by extending the AFDC program to husband-wife families, it may be expected that male earnings will increase.

B. Child Support Reform

Another important area of activity in public policy toward low-income families that could have an effect on labor force attachment and earnings is child support reform. Recent activity in this area has been motivated by at least two factors. First, child support is awarded to only 58 percent of all women with children who are potentially eligible for support, and to only 40 percent of poor women (U.S. House of Representatives, 1986, p. 416). Of those with awards, many women do not receive the full amount due--about 50 percent receive less than the amount due and 24 percent receive nothing at all. Only 50 percent receive the full amount of the award. Second, the AFDC program is in part a substitute for child support payments, to the extent that the children on AFDC have fathers who are alive and who have sufficient earnings to support their children but who are not doing so. Consequently, child support reform could reduce the AFDC caseload.

For present purposes, the question is whether child support reform, viewed as a type of welfare reform, would have any effect on encouraging work effort and earnings. Implicitly, the question is also whether the existing child support system discourages work effort and earnings relative to one with stronger enforcement requirements and greater award amounts. The theoretical effects of increased child support on work effort and earnings are different for the absent fathers and for the female custodial parents. For female heads, for example, the effects are ambiguous in direction. Increased support would offer women a higher income if they were off AFDC--and, in addition, a form of income that would not fall as they worked more (i.e., it would not necessarily be "taxed")--and hence would encourage departure from the AFDC rolls and an increase in work effort and earnings. But the greater income available to women would also have a disincentive effect by lessening their need to rely on their own earnings for income.

The effects of increased awards on the work effort and earnings of men is even more ambiguous. The simplest prediction would be that absent fathers would work more if they were required to support their children to a greater degree, for this would presumably move them closer to the contribution that they would have made were they married to the mothers of their children. As noted previously, married men have higher earnings and work effort than unmarried men. Essentially, child support reform reintegrates the incomes of the two parents and moves their joint incomes closer to what they would be if they were married (though they must inevitably be less in total because the advantages of division of labor within the unit are lost). Set against this simple inference are the possibilities that lower marital formations would result, for the implicit economic advantage of marriage would be lessened (at least from the point of view of the male), and that the increased child support would be assessed on actual male income rather than potential male income, in which case it would have disincentive effects on male work effort. Some of these issues have been addressed indirectly by Weiss and Willis (1985).

The research that has been performed on this topic to date has been mostly concerned with female heads alone. Graham and Beller (forthcoming) estimate that an increase in child support payments would have essentially zero effects on the work effort and earnings of female heads, for the two opposing effects noted above cancel out. Garfinkel, Robins, and Wong (1988) estimate that a combined program of increased award amounts, increased enforcement of awards, and a child support guarantee currently being tested in Wisconsin would increase the labor supply of female heads only by about two-to-three percent. Thus, while the equity aspects of such reform may be desirable, their effects on the labor force behavior of female heads appear to be quite small.

C. Work and Training Programs

One of the major avenues for increasing the human capital and labor force attachment of the disadvantaged is through work and training programs. Some of these programs have been directed at welfare recipients and there has been a considerable amount of activity at both the federal and local area in this regard. For the general low-income population, the major training program serving the disadvantaged is, at present, the Job Training Partnership Act (JTPA).

Most of the research on training programs has concerned whether such programs have any significant impact on the future earnings of those trained. There have been a large number of evaluation studies of different programs for the disadvantaged, and the results of these studies have been reviewed by Bassi and Ashenfelter (1986), Barnow (1987) for the Comprehensive Employment and Training Act (CETA) program, and Moffitt (1988) for welfare training programs.

Historically, most evaluations have been concerned with the early Manpower Development and Training Act (MDTA) training program from the 1960s, the Job Corps, and the CETA program. The MDTA began in 1962 has a program for the "structurally" unemployed, by which it was meant those unemployed individuals who had been made redundant by structural shifts in the types of jobs demanded in the economy. However, the focus eventually shifted to the disadvantaged, and provided primarily classroom training and on-the-job training. The results of the evaluations of the MDTA (e.g., Ashenfelter (1978)) showed generally positive earnings effects in the range of $200 to $550 per year, with larger effects for women than for men. However, it was also found that the earnings impacts may decay fairly rapidly, casting some doubt on the permanence of the earnings increase.

The Job Corps, a War on Poverty program that is today included as part of JTPA, provides education and vocational training in a residential environment to youth from disadvantaged backgrounds. The Job Corps is one of the more expensive training programs in operation because of its residential character. However, its earnings payoffs have been estimated to be sufficiently high to generate benefit-cost ratios considerably in excess of one.

There have been numerous evaluations of the CETA program. CETA (1973-1982) provided a variety of services, including classroom training, on-the-job training, work experience, and public service employment to eligible disadvantaged individuals. Although disadvantaged status was generally based upon low income and/or a history of low employment, AFDC recipients were also included and constituted approximately 18 percent of CETA participants. A major review of the CETA research recently completed (Barnow, 1987) indicated that CETA increased the earnings of its participants by approximately $200 to $600 per year (late 1970s dollars). The impacts were much greater for women than for men and, indeed, some of the studies found no effects for men at all. The studies also found that the on-the-job training and public service employment options had bigger effects on earnings than either classroom training or work experience.

As emphasized in Barnow in his review, these estimates of earnings payoffs should be treated with some caution. Most of the studies did not follow trainees for more than two years past the time of training and thus the payoffs could have later decayed. In addition, Barnow found that the estimates appear to be quite sensitive to the comparison group methodology and econometric technique employed, a common difficulty in non-experimental evaluations. The estimates reviewed by Barnow are also only those voluntary participants, who are likely to be a self-selected (i.e., "creamed") portion of the eligible population. If so, extending such programs to a wider set of the population would presumably lower the average earnings impact.

The major training program for the disadvantaged since 1982 is the JTPA program. JTPA serves disadvantaged youth and adults, defined as individuals whose total family income over the six months prior to application is less than the maximum of the poverty line (for the given family size) and 70 percent of the BLS lower living standard. Unlike CETA, JTPA provides no funds for public service employment. Instead, JTPA provides support for institutional and on-the-job training, job search assistance, counseling, and other work-related assistance. JTPA is also much more decentralized than was CETA, allowing considerable latitude and discretion to local training agencies in determining the services offered and the types of participants enrolled. It should also be noted that total expenditures in the JTPA program are much below those that were authorized for the CETA program during its existence.

Although there have been no major impact evaluations of JTPA, there has been considerable discussion of whether it "creams" from the eligible population. "Creaming" is said to occur when the most-employable, "best-off" individuals are disproportionately enrolled in the program to the detriment of the least-employable, "worst-off" individuals. Such a practice would run against the desire to help those individuals "who are most in need," as the legislation requires. To some extent, creaming is thought to be a natural response to performance standards that judge the success of local JTPA agencies on the basis of criteria such as gross placement rates that are naturally higher, the more employable the participants in the program.

A related issue is the extent to which existing JTPA resources are concentrated on those most in need. Sandell and Rupp (1988) point out that, despite the general eligibility criterion of disadvantaged status, almost 30 percent of the JTPA caseload is constituted by AFDC recipients. Moreover, among school dropouts eligible for JTPA, only 1.7 percent actually receive services. Sandell and Rupp show that the major determinant of receipt of JTPA services is whether or not the individual has been unemployed over the last six months. Unemployment per se is not an optimal criterion for targeting on the disadvantaged since many unemployed are not necessarily in need of long-term assistance.

There have been many evaluations of work and training programs for AFDC recipients, far too many to evaluate in detail here (see Moffitt (1988)). Historically, the major training program for AFDC recipients was the WIN program, which was estimated to have positive impacts on recipient earnings of up to $1200 per year, a large amount (Grossman et al., 1985). However, the comparison group used for the evaluation was drawn from waiting lists for WIN, a group unlikely to be an adequate control.

The more recent evaluations have been based upon various types of "workfare," work requirement, or training programs for welfare recipients. The policy movement in this direction has gathered strength in the past few years and has resulted in the inclusion of a type of work requirement in 1988 welfare reform legislation. The programs that have been implemented and tested thus far do not require work, per se, but instead require some form of job training, job search, education, or "work experience," where the latter often means work in subsidized employment or in some type of sheltered environment outside of the regular labor market. Such programs are designed to increase the individual stock of human capital and to raise future earnings.

The most relevant programs in the current debate over training and work programs stem from 1981 and 1984 federal legislation allowing states to operate strengthened work-related programs (called WIN "demos"). States are now allowed to require increased job search of recipients, to operate community work-experience programs requiring recipients to work at community jobs ("workfare"), and to operate grant diversion programs that use the AFDC benefit to subsidize private-sector or public-sector employment. By January 1984, 42 states were operating one of these types of programs, reflecting what was a strong response to the legislation (Congressional Budget Office, 1987). The types of programs implemented by the states are very diverse and difficult to summarize, and to date there is little information on the distribution of different types. However, it does appear that almost all states have offered some form of job-search assistance (which comes under the WIN demos) and that very few of the states have large enrollments in workfare programs (Congressional Budget Office, 1987, p. 25).

A major evaluation of the programs in five of the states has been conducted by the Manpower Demonstration Research Corporation (MDRC) (Gueron, 1987). In four of the sites, which provided primarily job search and work experience but also occasionally education and training or workfare, earnings impacts ranged from $120 to $550 per year. In a fifth site where the strongest emphasis on workfare was placed and the least on training, there were no significant earnings or employment impacts. This is consistent with the relative lack of emphasis of workfare programs on human capital formation.

The major conclusion to be drawn from this review of existing training programs for the disadvantaged is, once again, that they are overwhelmingly directed toward the population of disadvantaged women and female household heads. The majority of services are directly toward recipients of AFDC, who are predominantly female heads. Even the JTPA program, which is the major program for men, serves AFDC recipients to a high degree and serve very few of the eligible school dropouts in the U.S. population. The only other components of the transfer system in which at least some males are enrolled are the AFDC-UP program and the Food Stamp program. Training programs in AFDC-UP are similar to those in the AFDC program, and therefore a strengthening of AFDC-related training programs would redound to the benefit of those men enrolled in AFDC-UP. The Food Stamp program also requires work and training programs, and a strengthening of these would also assist some males.

D. Wage-Rate and Earnings Subsidies

Another method of stimulating employment and earnings among low-skilled and disadvantaged workers is through wage-rate and earnings subsidies. Such subsidies can take a wide variety of forms, ranging from subsidies to employers who hire disadvantaged workers to tax breaks provided directly to low-income earners such as that provided by the Earned Income Tax Credit (EITC). Employer subsidies can also take a variety of forms, some based directly on hourly wages and some on earnings, and some on hiring, per se. Most of the major issues are discussed in Palmer (1978) and Haveman and Palmer (1982). Part of the appeal of such subsidies is that they provide a direct means of stimulating employment among the low-skilled which seems to be without the labor supply disincentives usually associated with transfer programs. An increase in the after-tax wage rate such as that provided by the EITC gives the worker a clear incentive to work more and a wage rate subsidy to an employer clearly gives the employer a greater incentive to hire the worker.

Unfortunately, however, there are two types of disincentives in such programs. First, an earnings subsidy must be phased out at some level of earnings if it is to be provided only to the disadvantaged. Therefore, there must always be some range of earnings over which the subsidy amount decreases with higher earnings rather than vice-versa. While this range may be sufficiently high to make its impact fall only on a group that is not ordinarily considered to be disadvantaged, it nevertheless provides a disincentive to higher earnings in that group. Thus, for example, the 1989 EITC subsidizes earnings at a 14 percent rate for those families with income up to $6500, but decreases the subsidy at a 10 percent rate for families with income from $10,000 to $19,000.

Second, even if incentives to employment, hours of work, and other measures of labor supply are not affected, incentives for human capital formation will be affected for the same reason. The phase-out of a subsidy to hourly wage rates, for example, must once again result in some range of hourly wages over which the subsidy declines. In this range the rate of return to investment in human capital is lower than it is in the absence of the program. Once again, the group so affected may not be disadvantaged but any disincentives they act upon will reduce the aggregate level of human capital in the economy.

Aside from these problems of incentives to the individual, targeted wage and earnings subsidies have the additional difficulty of generating possible substitutions of subsidized employment for unsubsidized employment. A targeted subsidy gives the employer an incentive to alter the mix of his workforce by increasing employment among the targeted group and decreasing it among the nontargeted group. A related problem that arises with such programs is that a large portion of the cost is absorbed by windfalls given to employers who would have hired workers in the target group in any case, and even in the absence of the tax credit.

Similar sorts of problems arise when employment is directly subsidized in the state and local sector, as it was in some portions of the CETA program (public-sector employment components). In this case, there is a serious possibility that state and local governments use the subsidized employment to reduce employment in other parts of the government or even to lower taxes or increase expenditures on services. While some of these practices can be monitored, most ultimately cannot be.

Much of the research that has been conducted on these types of programs to date has focused on their practical problems, at least those associated with administering such a program through the employer. A true wage-rate subsidy, for example, requires the employer to define an hourly wage rate for all workers even though many workers are not paid by the hour and others are paid partly by the hour but receive fringe benefits in some other form as well. A more general problem is that employees and employers have an incentive to collude in any of these types of programs because they can artificially inflate the wage rate or earnings level of the job to increase the government subsidy. Another practical problem with targeting the disadvantaged is the difficulty in requiring employer verification of disadvantaged status. Employers generally are put off by excess amounts of paperwork and may find it to be heavy if past employment, household income, or other characteristics of the worker's background must be verified. One solution to this problem is to have individuals certified by an agency of the government first.

The experience with wage rate and earnings subsidies in the U.S. is limited. Undoubtedly, the program with the largest impact is the EITC, the subsidies of which are received by millions of U.S. workers and their families. The EITC was created in 1975 and is a refundable tax credit (earnings subsidy). However, the EITC is available only to families with children. Thus, among males, only men who are married and who have children will receive its benefits. Thus, large numbers of disadvantaged males--unmarried men (e.g., youth) and married but childless men--do not receive the subsidy. Additional problems with the EITC are (1) its lack of target efficiency on the poor because families with high amounts of unearned income are eligible, (2) its lack of target efficiency arising because families with high-wage-rate workers but low hours of work may be eligible, and (3) its annual accounting period, which makes short-term relief difficult and hinders the perception of the subsidy by the individual worker. In addition, the EITC has been plagued throughout its history by a small take-up rate, especially among those who could file returns and obtain a refund but do not do so because they typically do not pay taxes and hence typically do not file returns. There are currently bills before Congress to increase the levels of generosity of the subsidy in the schedule.

The major employer-based intervention that has been attempted in the U.S. is the Targeted Jobs Tax Credit (TJTC). The TJTC was enacted in 1978 and provides a tax credit for employers who hire members of certain groups, including economically disadvantaged youth (i.e., youth from low-income families), AFDC mothers, and the disabled. Its eligibility provisions have been changed in various ways over its lifetime and it is currently scheduled to be phased out for employees hired after 1989. The TJTC provides to employers an effective subsidy rate for the first-year wages of eligible workers of approximately 30 percent, a sizable amount. Over half a million workers have been certified under the program (U.S. House of Representatives, 1986, p. 619), mostly disadvantaged youth (59 percent of the total) and AFDC mothers (16 percent).

Altogether, about 570,000 workers received TJTC subsidies in 1987. However, the net effect of the TJTC on employment is certainly less than this because many of the certifications would have been hires in the absence of the TJTC. In addition, evaluations of the TJTC generally have shown its major problem to be a low take-up rate by employers, for most eligible workers are working for firms that do not apply for the credit (Bassi and Ashenfelter, 1986). Some supportive evidence of this finding was reported by Burtless (1985) who analyzed a wage voucher experiment in Dayton, Ohio, and found that only 24 percent of employers bothered to apply for the credit. Further, Burtless found that individuals without the voucher found new jobs just as fast as individuals with the voucher.

E. Child Care

Public and governmental interest in child care has increased enormously over the last few years. As labor force participation rates of women have increased and as female earnings have risen, the demand for child care quantity and quality has also risen. The child-care industry has responded rapidly to the increased demand although there have been some lags in the supply responsiveness. Firms have also increased their supply of day-care facilities for employees. The federal government as well as state and local governments have become heavily involved in the subsidization of child care in various forms, leading directly to the need for a decision on the best method of subsidization.

For present purposes it is necessary to make a distinction between possible failures in the market for child care which affect all members of the labor force by resulting in general underprovision of child care, and the need on equity grounds to provide additional child care for low-income families. Since the focus of this review is on methods to increase the labor force attachment and earnings of the disadvantaged, only the second of these issues is of relevance here. Consequently, even if there is no case to be made that governmental intervention in the child-care market is appropriate, it may still be desirable to subsidize the care of low-income families if it is desired to increase the well-being of families in that fashion rather than in some other (e.g., through direct cash payments).

This having been said, it remains to be determined whether subsidies to the poor in the form of child care, which represent a form of in-kind subsidy, would increase the consumption of child care by the full subsidized amount. As with all in-kind subsidies, families that are already spending a certain amount of time or money on child care may reduce their own contributions of time and money after receiving public subsidies. The degree to which substitution would take place is at present unknown.

A related issue of some importance in the discussion of child-care subsidies for low-income families is the degree to which such families presently use informal rather than formal care, and the extent to which it is desirable to subsidize the latter at the expense of the former. Among working married women with children under five years of age, only one-fifth use formal organized day-care facilities; the rest use care in the home or another home by a relative or nonrelative. The latter is often unpaid care. Therefore, as a practical matter, since governmental subsidies are easiest to provide in formal rather than informal settings, it should be expected that governmental subsidies will alter the allocation of child-care production toward formal care.

The theoretical prediction of the effect of child care on work effort and earnings is clearly positive, at least on the work effort of the primary care-giver, usually the wife in a married couple. Child-care expense consists of fixed costs and variable costs (the latter increase with hours of work, while the former do not), and a reduction in either will increase the return to working rather than not working. If a child-care subsidy decreases variable costs, it is possible that income effects may reduce work effort and hence outweigh substitution effects, but this seems empirically unlikely.

In any case, whether the work effort of the husband in a married couple would change after a reduction in child-care costs is not clear and depends upon the relation between the work efforts of the partners. In the conventional theory of joint allocation of leisure between husbands and wives, their non-work times are usually regarded to be substitutes and, hence, it would be expected that husband's work effort would fall (ceteris paribus). However, existing estimates of the relevant cross-price elasticities are quite small, and it could be reasonably expected that, as a first approximation, there would be little effect on the labor supply of husbands. Thus, it can be seen that, once again, public policy in this area is more focused on the labor force problems of women than those of men. The same is true for child-care efforts connected to the welfare system. The workfare and training programs discussed earlier almost always provide for heavy child-care provision and subsidy for welfare recipients enrolled in such programs, for participation in training could not be reasonably expected if no child care were provided. Any positive effects on work effort in this case would, because of the eligibility conditions for AFDC, fall on female heads of family.

The best study to date on the effects of child care on female labor force attachment was conducted by Blau and Robins (1988), who used data from the Employment Opportunity Pilot Project to estimate the effects of child-care costs on the probability that a woman works. Unfortunately, Blau and Robins did not have good information on child-care costs, a common difficulty with empirical work in this area. They used two measures, one a measure of the hourly wage of child-care workers in the area taken from the most recent decennial Census, and one the average per-child expenditure of the families in their sample in each area. Their results showed that, as expected, child-care costs are inversely related to employment probabilities after controlling for other factors affecting employment. Their results imply that a 10 percent decrease in weekly child-care costs should be expected to increase the employment rate of married women by approximately three-to-four percentage points. This is a nontrivial elasticity and would, if effected, represent a large increase in the employment rate of women in the U.S.

IV. POLICY RECOMMENDATIONS

Over the last few years there has been a resurgence of concern with the problems of the economically disadvantaged in the U.S. An increase in the poverty rate starting in the late 1970s and continuing into the 1980s has arisen not from a decline in transfer payments or from a decline in other sources of unearned income but instead from decreases in real earnings in the labor market among the least-skilled groups in the society. Also, wage inequality in the labor force has increased among men partly because of growth in the relative number of low earners. Rates of labor force participation of young, less educated men have fallen over the 1970s and 1980s for both black and white men, but much more so for the former. Indeed, among black men with less than a high school education, the fraction not working has risen from approximately 20 percent in 1940, to 26 percent in 1960, to an enormous 50 percent in 1980. Even young black men with a high school diploma have experienced increased inability to find work, which has grown through the 1970s to 28 percent by 1980. Some deterioration has even occurred for those in the young black male population with a college degree.

The current set of public policies for the disadvantaged is much more focused on the problems of women than those of men. The U.S. transfer system, for example, is aimed almost exclusively at disadvantaged and poor women; low-income men receive little attention. In addition, the recent emphasis on work and training programs for welfare recipients, such as that embodied in the Family Support Act of 1988, is aimed at female heads of family, the primary recipient group in the current U.S. welfare system. The reform of the child support system in the U.S. is aimed first and foremost at the problems of women, especially low-income women. The subsidization of child care, under heavy public discussion at the moment, is likewise aimed primarily at relieving the labor force difficulties of low-income women.

The only major exceptions to this generalization are the Earned Income Tax Credit (EITC) and the Job Training Partnership Act (JTPA), both of whom have males as a major target group. Nevertheless, neither provides comprehensive support to disadvantaged men. The EITC is provided only to married men with children, thereby bypassing a large number of disadvantaged males. Moreover, research on the EITC and similar earnings subsidies suggests that their work incentives may be considerably weaker than previously thought. In the JTPA program, a greater fraction of support is provided to women than to men. In addition, it has been argued by some analysts that JTPA inordinately "creams" from the eligible population by selecting only those who are most employable to begin with. Thus, it may be the JTPA is not serving the most disadvantaged males in the U.S. population. This is particularly important because it is now thought that manpower training programs such as JTPA do have positive effects on earnings, even though of modest magnitude.

Two means-tested transfer programs that do provide benefits to low-income males are the Aid to Families with Dependent Children and Unemployed Parent (AFDC-UP) program, which provides cash benefits to poor husband-wife couples, and the Food Stamp program, which provides food coupons to poor families and individuals. However, the AFDC-UP program has been federally mandated only as of 1990; in the past, only about one-half of the states have provided such benefits. Moreover, in neither the AFDC-UP nor the Food Stamp programs have training programs for recipients been systematically targeted on disadvantaged males.

Policy Recommendations:

- * Place more emphasis on assistance to disadvantaged men in the U.S. population.
- * Expand and strength job training programs for males and focus additional JTPA resources on the most disadvantaged males.
- * Strengthen the training opportunities in the AFDC-UP program, which will be mandated in all states by 1990 under the provisions of the Family Support Act of 1988.
- * Strengthen the training opportunities for men receiving benefits in the Food Stamp program, the only universal transfer program in the U.S.

REFERENCES

Ashenfelter, Orley. "Estimating the Effect of Training Programs on Earnings." Review of Economics and Statistics 60 (1978): 47-57.

Barnow, Burt. "The Impact of CETA Programs on Earnings." Journal of Human Resources 22 (Spring 1987): 157-193.

Bassi, Laurie and Orley Ashenfelter. "The Effect of Direct Job Creation and Training Programs on Low-Skilled Workers." In Fighting Poverty, ed. Sheldon Danziger and Daniel Weinberg. Cambridge, Mass.: Harvard University Press, 1986.

Blackburn, McKinley and David Bloom. "Earnings and Income Inequality in the United States." Population and Development Review 13 (December 1987): 575-609.

Blau, David and Philip Robins. "Child Care Costs and Family Labor Supply." Review of Economics and Statistics 70 (August 1988): 374-381.

Burtless, Gary. "Are Targeted Wage Subsidies Harmful? Evidence from a Wage Voucher Experiment." Industrial and Labor Relations Review 39 (October 1985): 105-114.

Cain, Glen and Ross Finnie. "The Black-White Difference in Youth Employment: Evidence for Demand-Side Factors." Journal of Labor Economics, forthcoming.

Congressional Budget Office. "Work-Related Programs for Welfare Recipients." Washington, D.C.: U.S. Congress, 1987.

Danziger, Sheldon; George Jakubson; Saul Schwartz; and Eugene Smolensky. "Work and Welfare as Determinants of Female Poverty and Household Headship." Quarterly Journal of Economics 77 (August 1982): 519-539.

Ellwood, David and Mary Jo Bane. "The Impact of AFDC on Family Structure and Living Arrangements." In Research in Labor Economics, ed. Ronald Ehrenberg, Vol. 7. Greenwich, Conn.: JAI Press, 1985.

Garfinkel, Irwin; Philip Robins; and Pat Wong. "The Wisconsin Child Support Assurance System: Estimated Effects on Participants." Madison: Institute for Research on Poverty, 1988.

Graham, John and Andrea Beller. "The Effect of Child Support Payments on the Labor Supply of Female Family Heads: An Econometric Analysis." Journal of Human Resources, forthcoming.

Grossman, Jean; Rebecca Maynard; and Judith Roberts. "Reanalysis of the Effects of Selected Employment and Training Programs for Welfare Recipients." Princeton: Mathematica Policy Research, 1985.

Gueron, Judy. "Reforming Welfare with Work." New York: Manpower Demonstration Research Corporation, 1987.

Haveman, Robert and John Palmer, eds. Jobs for Disadvantaged Workers: The Economics of Employment Subsidies. Washington, D.C.: The Brookings Institution, 1982.

Hoffman, Saul and Greg Duncan. "A Comparison of Choice-Based Multinomial and Nested Logit Models: The Family Structure and Welfare Use Decisions of Divorced or Separated Women." Journal of Human Resources 23 (Fall 1988): 550-562.

Killingsworth, Mark. Labour Supply. Cambridge: Cambridge University Press, 1984.

Kosters, Marvin and Murray Ross. "The Quality of Jobs: Evidence from Distributions of Annual Earnings and Hourly Wages." Washington: American Enterprise Institute, 1988.

Levy, Frank. "The Labor Supply of Female Heads, or AFDC Work Incentives Don't Work Too Well." Journal of Human Resources 14 (Winter 1979): 76-97.

Levy, Frank. "How Big is the American Underclass?" Working Paper No. 0090-1. Washington, D.C.: The Urban Institute, 1977.

Moffitt, Robert. "Work Incentives in the AFDC System: An Analysis of the 1981 Reforms." American Economic Review 76 (May 1986): 219-223.

Moffitt, Robert. "Work and the U.S. Welfare System: A Review." Special Report #46, Madison, Wisconsin, Institute for Research on Poverty, 1988.

Murphy, Kevin and Finis Welch. "Wage Differentials in the 1980s: The Role of International Trade." Los Angeles: Unicon Corporation, 1988.

Palmer, John, ed. Creating Jobs: Public Employment Programs and Wage Subsidies. Washington: Brookings Institution, 1978.

Sandell, Steven and Kalman Rupp. "Who Is Served in JTPA Programs: Patterns of Participation and Intergroup Equity." Research Report RR-88-03. Washington: National Commission for Employment Policy, 1988.

Sawhill, Isabel. "Poverty in the U.S.: Why Is It So Persistent?" Journal of Economic Literature 26 (September 1988): 1073-1119.

U.S. Department of Labor, Bureau of Labor Statistics. Labor Force Statistics Derived from the Current Population Survey, 1948-87. BLS Bulletin 2307. Washington: Government Printing Office, 1988.

U.S. House of Representatives, Committee on Ways and Means. Background Material and Data on Programs within the Jurisdiction of the Committee on Ways and Means. Washington: Government Printing Office, 1986.

Weinberg, Daniel. "Filling the 'Poverty Gap', 1979-1984: Multiple Transfer Program Participation." Technical Analysis Paper No. 32. Washington: Department of Health and Human Services, 1986.

Weiss, Yoram and Robert Willis. "Children as Collective Goods and Divorce Settlements." Journal of Labor Economics 3 (July 1985): 268-292.

Welch, Finis. "The Employment of Black Men." Journal of Labor Economics, forthcoming.

Wilson, William. The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy. Chicago: University of Chicago Press, 1987.

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A Strategy to Address America's Workforce Crisis

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PREFACE

The Commission on Workforce Quality and Labor Market Efficiency was created on July 11, 1989, by the Secretary of Labor, the Honorable Ann McLaughlin. The Commission was charged with the task of making specific recommendations for the Department of Labor and the nation to increase the excellence of the American workforce. In particular, the Commission was given the following direct responsibilities:

1. Examine the roles and effectiveness of privately and publicly provided job training and education.
2. Determine the best mechanisms to keep the education system and training providers continuously informed of the changing skill needs of employers and workers.
3. Consider the problem of financing private investments in human capital and determine the best ways to access financial capital markets for that purpose.
4. Assess the appropriate roles of employers, unions, and government in retraining and relocating dislocated workers.
5. Examine ways in which private and public job placement agencies can enhance the efficiency of the changing labor market of the future.
6. Assess the need for greater flexibility of employers' policies to facilitate labor force entry.
7. Evaluate the opportunities to enhance productivity through alterations of the employment arrangement such as innovative pay systems and benefit structures, employment security provisions, and worker involvement.

As a first step toward carrying out these responsibilities, a broad range of background papers was commissioned through a competitive solicitation. These papers, along with three others written by Commission staff members, are included here.

The authors were requested to summarize existing research and to suggest specific recommendations for the Commission's consideration. The Commission's final report, *Investing in People: A Strategy to Address America's Workforce Crisis,* does in fact contain many recommendations that were originally suggested in the papers. The report was presented to the Honorable Elizabeth Dole on Labor Day 1989.

While the Commission's report draws heavily on these background papers, it is important to note that the authors are solely responsible for the facts reported and the opinions expressed. These papers should not be interpreted as reflecting the official positions of either the Department of Labor or the Commission on Workforce Quality and Labor Market Efficiency.

Finally, we would like to note our gratitude to these authors for the high quality and timeliness of their work.

David L. Crawford, Executive Director
Laurie J. Bassi, Deputy Director

Commission on Workforce Quality
and Labor Market Efficiency

U.S. Department of Labor
Washington, DC
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23. LABOR FORCE PARTICIPATION AMONG DISABLED PERSONS

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and

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23. LABOR FORCE PARTICIPATION AMONG DISABLED PERSONS

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This paper explores the factors that influence the labor force participation of disabled persons. It considers the problems involved in defining and counting the disabled population, the nature of the relationship between aging and disability, the institutions through which we conduct disability policy, the effects of income transfers on the labor force participation of disabled persons, the usefulness of rehabilitation programs, and the value of civil rights programs on behalf of disabled persons. The paper concludes with some practical policy suggestions aimed at increasing the labor force participation of disabled persons.

Although the paper covers many topics, our aims are quite simple: We want to show how institutions encourage or discourage labor force participation and to suggest ways of improving the performance of our public policies.

Defining Disability

Unlike other groups whose rates of labor force participation are the subject of scholarly inquiry, disabled persons cannot be identified with precision. The very concept of disability resists definition. The scholarly convention is to think of disability in terms of a continuum that begins with illness or impairment. Most people recover from such incidents; in some cases, however, the transient illness or other medically defined condition leaves the person with a functional limitation--some lasting inability to perform "normal" physical or mental functions, such as the inability to climb stairs or to maintain amiable relations with co-workers. Some people may adapt themselves to the functional limitation with no loss of productivity and thus maintain their attachment to the labor force. Others may perceive themselves as unable to carry on their normal, usual, and accustomed tasks because of their mental or physical conditions. Social scientists define such persons as disabled.

In the real world, the definition of disability seldom conforms to this typology. Social insurance programs, for example, equate disability with actual or potential wage loss, and the administrators of those programs often use physical impairment as a proxy for wage loss. Hence, the distinctions between impairment or functional limitation and disability are not honored. To be impaired is to be disabled. Furthermore, some of the programs equate disability with the inability to perform one's customary occupation; other programs have a more stringent definition and insist on the inability of performing any job--however that concept might be measured--as a condition of receiving benefits. Finally, some definitions of disability do not depend on the condition of real or potential wage loss so much as on the existence of an impairment or physical and mental condition that triggers prejudice on the part of employers. In this definition, policymakers are encouraged to think of disabled persons as a minority group who face physical and attitudinal barriers. As a woman quoted in a popular health guide puts it, "We are not disabled; it is society which disables us by being so unsupportive" (Boston Women's Health Book Collective, p. 7).

The Number of Disabled People

Because no consensus has emerged on how to define disability, there can be no single unambiguous count of disabled persons. Even if we focus on a single standard such as a functional limitation that leads to wage loss, the fact remains that in a group of people with identical functional limitations, some will be disabled and some not. Factors such as age, education, personal motivation, alternative sources of income, physical barriers in the working environment, the attitude of employers toward the basic abilities of the handicapped, the condition of the labor market all will play a part in the outcome. For that reason, it makes as much sense to think of disability as a socioeconomic phenomenon as a medically defined concept.

The results of surveys conducted by the Social Security Administration in 1966, 1972 and 1978 show that about 17 percent of the population considered themselves as having some degree of work disability in both 1966 and 1978. Despite this agreement, the surveys report a substantial increase in the degree of severe work disability, defined as a person unable to work altogether or unable to work regularly, from 6 percent of the population in 1966 to 8.6 percent in 1978. This outcome has important implications for labor force participation rates. In 1966, 19.2 percent of those in the severely disabled category reported themselves as being in the labor force; in 1978, this proportion had decreased to 13.6 percent (McNeill, 1983).

From a policy standpoint, it might be preferable to substitute verified measures of impairment and functional limitation for a person's own perceptions of his or her ability to work. With such measures, we could begin to understand better why some people join the labor force and others choose to accept a disabled status or, alternatively, whether people with certain impairments and functional limitation face discrimination in the labor market.

One study that stands out in its use of longitudinal data and good measures of a person's impairment is Brehm and Rush's 1988 examination of the Framingham Heart Study data. Although the study does not use sophisticated econometric techniques to control for factors other than impairment that might affect labor force status, it makes imaginative use of a rich data set.

Brehm and Rush took the medical files of a cohort of the sample, all of whom are examined twice a year as part of the study, and gave them to persons with experience in making disability determinations for the Social Security Administration. The disability examiners used the data in the medical files to decide if the subjects' conditions warranted the finding that they met or equalled the medical listings that qualify applicants for social security disability benefits. The authors then traced the records for several years to determine whether the persons were still employed.

Brehm and Rush found some interesting things about the labor force participation of these impaired persons. Almost all of the men in the prime age group were employed one examination before they were found to be impaired. By the time of their impairment, 90 percent were working. One examination later, more than a quarter of the group had died, yet 60 percent continued to work. Two examinations later, four-tenths of the group had died, but almost half were still employed. If these men survived, in other words, their labor force participation rates rivaled the participation rates found among the nonimpaired and the less severely impaired.

Using this data, Brehm and Rush see the disabled and the impaired as different from one another. They regard the disabled as a unique subset of the impaired who are distinguished by their socioeconomic and demographic characteristics and not by their state of health as it presumably relates to work ability. In our opinion, this conclusion reinforces the notion that socioeconomic factors play a large role in the definition of disability status and in our understanding of the numbers of disabled people.

Aging and Disability

In thinking about the definition and prevalence of disability, the relationship between aging and disability requires special consideration. It is no accident that in most discussions of disability the population under consideration is restricted to those persons normally in the labor force age group. When it comes to children and older persons beyond normal retirement age, difficulties arise. What, for example, is the appropriate activity to test for in the case of a retired person--recreation, activities of daily living, or something else? And all persons become disabled before they die--some for long periods of time and others for only a micro-second--but presumably the disability rate and the mortality rate are not the same things.

The fact remains, however, that age and disability move together. The older a person is, the more likely he or she is to be disabled. Older people are less healthy, more impaired and functionally limited, and more disabled than younger people (M. Berkowitz, 1988).

Demography and disability combine to pose some intriguing policy questions, particularly when one considers the almost certain rise in the median age of the population between 1990 and 2040 from 33 to 42 years. The best estimates also posit that the percentage of the population 65 years or over should grow from 12.7 in 1990 to 21.7 in 2040 (Aging America: Trends and Projections, pp. 11, 13). We know that people are living longer as mortality rates in the older age groups decline, but we know less about comparable trends in morbidity and disability rates. Will the increasing number of older persons be healthier and able to participate in the labor force? Or will the same disability patterns prevail so that the increasing number of older persons will make for an increasingly dependent population?

The common sense interpretation is that health should improve with falling death rates, but the elimination of infectious disease may have fundamentally changed the meaning of mortality as a health measure (Ycas, 1987). Gruenberg (1977) maintains that we may be suffering from "failures of success". Mortality has been postponed, not by curing the underlying causes of death, but by curbing the lethality of their side effects. Those alive today who would have died in an earlier era are not healthy; they are sick persons whose problems can be kept under control at a level of severity short of death.

As for empirical studies that attempt to measure the effect of age and disability on labor force and other forms of participation, Newquist (1984) uses National Health Interview Survey data to show that the number of older persons who report that they are unable to carry on their major activity has increased over time. Newquist hypothesizes that the older population may be restricting its activities in the face of a chronic condition in order to avoid serious illness consequences. Several other studies note this phenomenon of an increased willingness of persons diagnosed as having certain conditions or diseases to restrict their activities (Haynes et al., 1978), although Ycas (1987) casts some doubt on these inferences. He argues that in the first half of the 1970's, the trend was toward worsening health in age groups near retirement age; in the late seventies, the trend was toward stable or improving health.

What does this confusing evidence mean? The literature lacks good explanatory models (M. Berkowitz, 1988; Robinson, 1986). Our best guess, after examining the literature (Fries, 1980; Fries and Crapo, 1981; Manton, 1982; Manton and Stallard, 1982; Wing and Manton, 1981), is that the trends towards declining health among the older age groups seem to be reversing. Any conclusions about health trends must be hesitant ones, but, if the trend is as we guess it may be, that is encouraging. The problems of increasing labor force participation may lie in the social arrangements we devise and not the medical area.

The American Disability System--An Institutional and Historical Overview

Beyond these definitional, demographic, and epidemiological concerns, a discussion of labor force participation requires an overview of the many programs and policies that mark government and employer responses to disability. In general, these programs reflect two approaches to the situation: Either they make the person better off by raising his level of income, whether through insurance or through public assistance, or they attempt to correct the situation that limits the worker's labor force participation, whether through individual training (rehabilitation) or environmental restructuring (ramps in buildings). Many people have access to formal systems that combine the two approaches.

The Social Security Disability System.

The most widely available public system includes the Social Security Disability Insurance Program (SSDI), the Medicare program, and the Vocational Rehabilitation (VR) program. In 1986 these programs cost about $20.1 billion for disability benefits paid to approximately 2.8 million disabled workers, $8.8 billion for Parts A and B of medicare (expenditures for disability beneficiaries), and about 4.2 million for the rehabilitation of social security disability beneficiaries (All program data from Virginia Department of Rehabilitative Services, 1988).

Designed to fit into the social security program, this system places a heavy emphasis on retirement, rather than labor force participation. To receive benefits, a worker needs to prove that he is "unable to engage in substantial gainful employment" as a result of a medically demonstrable condition that is expected to last a year. In other words, the successful applicant proves the inability to work. Once a worker passes the test, he receives a pension that paid an average of $471 a month in 1984, with an additional $131 if the worker had an eligible spouse and $139 for the worker's children (Social Security Administration, 1985. p. 1). Since the program tests the ability to work, benefits are either payable in full or not payable at all.

The history of Social Security Disability Insurance reflects the emphasis on retirement. Although the old age insurance program received legislative sanction in 1935, disability insurance did not arrive until 1956. To gain support for its passage, proponents portrayed it as a modest extension of old age insurance and as a prudent and socially necessary form of early retirement. As former commissioner Robert Ball recently expressed this idea, "it represented not a philosophical departure but a further rounding-out of the basic design" (Ball, 1988, p. 21).

This "rounding-out" encountered fierce opposition from the American Medical Association and the insurance industry and that prompted planners in the Social Security Administration to build safeguards into the program, such as a waiting period before the receipt of benefits and a stringent definition of disability that would dispel fears that the program would grow out of control. These features guaranteed that the bulk of the people in the program, once it was enacted, would be permanent labor force drop-outs who were automatically transferred from the disability to the old-age retirement program at the age of 65.

Just as disability insurance reflects the general design of the social security program, so does Medicare for disability beneficiaries. The program makes no distinction between the elderly receiving Medicare and disabled persons receiving Medicare, except that the disabled person needs to wait longer than an elderly person before becoming eligible. A disabled person must be entitled to benefits for 24 consecutive months before he or she can receive Medicare. For both the disabled and the elderly, the program reimburses expenses incurred during hospital stays for acute conditions, as well as doctor's treatments related to those acute conditions. The program makes no provisions for long-term care or for what might be called "permanent continuing care," such as an attendant who might assist a paraplegic in transferring from a bed to a wheel chair.

In a similar sense, the disability insurance program has never made effective arrangements for the rehabilitation of disability beneficiaries. Although the program began with a rehabilitation referral system, that system never amounted to much. The people who applied for disability benefits were older and more severely impaired than the typical client of the vocational rehabilitation agency. The state vocational rehabilitation agencies, often housed in a state's educational bureaucracy, relied on a casework system to assess a handicapped person's vocational potential and to coordinate a series of services, such as vocational training and remedial medical care known as "physical restoration," that would make the person employable. The program operated in a highly discretionary manner. Not all handicapped persons were required to use its services, nor was the program required to accept all of the people who applied for its services. Indeed, the counselors enjoyed considerable autonomy in judging a person's attitude. If a person was not "responsive from the first," in the words of an early rehabilitation publication, he could be labeled "infeasible" and denied services (Sullivan and Snortum, 1986, p. 187). Consequently, the handicraft nature of rehabilitation had little in common with the mass production system of social security disability determination.

Despite the very small number of disability insurance beneficiaries who were rehabilitated, the notion of spending money from the social security trust fund on rehabilitation continued to appeal to policymakers. The hope was to save money by freeing people from dependence on income maintenance benefits. At first, bureaucratic politics stalled the merging of the two programs. In 1965, however, Congress authorized the creation of the Beneficiary Rehabilitation Program. This program, run jointly by the Social Security Administration and the Rehabilitation Services Administration, reimbursed 100 percent of the costs for rehabilitating disability insurance beneficiaries. In time, this money, initially 1 percent of the year's disability insurance benefits (later raised to 1.25 and then to 1.5 percent) became a significant subsidy to the rehabilitation program. In 1976, it amounted to 102.6 million dollars, 9.2 percent of vocational rehabilitation expenditure.

That same year a gradual disenchantment with the Beneficiary Rehabilitation Program (BRP) began that culminated in the drastic alteration of the program in 1981. Part of the disenchantment stemmed from the evaluations made by the Social Security Administration (SSA) to assess the efficiency of the BRP program. Although initial evaluations were ambiguous, the SSA estimated the benefit-cost ratio as 1.60 in 1970 and 1.93 in 1972. Independent evaluations soon began to cast further doubts on the program. The GAO examined a small sample of beneficiaries who had been terminated from the program after rehabilitation and found that 62 percent of the persons who left the benefit rolls would have left anyway without rehabilitation services. Other independent examinations found benefit-cost ratios slightly over one (M. Berkowitz, et al., 1982).

Because of the disillusionment with the program, possibly because of overblown expectations, it was discontinued. Instead, Congress instituted a program under which the VR agency would get reimbursed for its services plus a bonus only if the person left the benefit rolls and stayed off for a period of six months. Only modest use has been made of this program. As one sign of the diminished nature of the program, the Social Security Administration estimated that only 3.5 million dollars (or less than 3 percent of the previous program) would be required in 1982 (E. Berkowitz, 1987).

Despite the disappointment with the Beneficiary Rehabilitation Program, the SSDI program also includes a number of incentive provisions designed to encourage the rehabilitation of persons on the rolls. Most of these date from the 1980 amendments, in which Congress turned its attention to the difficulties that program beneficiaries had in leaving the rolls. The amendments included provisions for a more liberal trial work period, the disregard of impairment-related expenses, and an extension of Medicare coverage after a person returned to work and left the rolls.

The Public Assistance Disability System.

The Social Security-Medicare-Vocational Rehabilitation system applies only to people with a record of labor force participation. A parallel public system consisting of Supplemental Security Income (SSI), Medicaid, and Vocational Rehabilitation assists those with a less permanent record of labor force attachment. This system, which requires a means test of its recipients, permits more state discretion than does the social security system, since all states (Arizona has no Medicaid program) administer Medicaid and Vocational Rehabilitation and some states supplement federal SSI payments. Hence, aggregate expenditure figures need to be considered with regard to the considerable variance that exists from state to state. In 1986, Supplemental Security Income cost 5.4 billion in disability-related expenditures (the program covers the blind, the elderly, and the permanently and totally disabled). Medicaid for disabled persons cost 15.6 billion dollars in the same year, and expenditures for the rehabilitation of SSI beneficiaries amounted to $600,000.

The small amount of money spent to rehabilitate SSI beneficiaries reflects many of the same factors that limit the investment made in the rehabilitation of social security beneficiaries. To qualify for benefits, SSI recipients need to meet the same stringent conditions as do applicants for social security disability benefits. Once they prove they are "unable to engage in substantial gainful activity," and that they are in need of financial assistance, they make poor rehabilitation candidates. The investment in the rehabilitation of SSI beneficiaries has never equalled that in the rehabilitation of SSDI recipients, and since 1981 the disparity has been extreme--on the order of six or seven to one.

The Work Injury System.

One of the most important features of the American disability system lies in the separation of work-related disability from other sources of disability. Work-related disability falls into the realm of workers' compensation, which is restricted to the payment of benefits in the event of injuries incurred at work and arising out of the employment situation.

The program dates from the Progressive era and bears many of the distinctive characteristics of that era. Before 1911, an industrial accident created a legal right of action by an employee against his or her employer. State workers' compensation programs were developed to protect employees, spare them from the uncertainties of the judicial system, and limit the legal liability of employers. These laws specified particular payments that an employer was required to make to an injured employee. Because the laws were an outgrowth of the tort law system, benefit levels were as much as reflection of the legal principle of damages as of the loss of wages. The earliest laws emphasized cash payments for industrial injuries; over time states added medical care and later rehabilitation services to the list of benefits (E. Berkowitz and M. Berkowitz, 1984, 1985).

Today's programs continue to be run by the states with no participation by the federal government. (The federal government does administer a significant program for its own employees as well as a program covering longshore and harbor workers.) Although the federal government has no direct administrative responsibilities in the state programs, it has maintained an interest in the state operations.

Unlike the social security program, which has welfare and insurance objectives and which is financed on a pay-as-you-go basis, the workers' compensation program functions as a true insurance program. Although a state-mandated program, workers' compensation is financed through the private sector (Worall and Butler, 1986) and like any private insurance program, the program is subject to the problems of adverse selection and moral hazard.

In workers' compensation, for example, problems arise related to the hiring of impaired people. If a person has already been injured, a second injury might lead to considerable costs that the employer must bear. Aware of the problem for many years, some states maintain what are known as "Second Injury Funds," which are designed to encourage the hiring of individuals with impairments by limiting the firm's liability in the event of a second injury. This problem is just one of many that make the labor force participation of people with disabilities difficult.

Not all states run second injury funds. Indeed, little about workers' compensation is consistent from place to place. Some states permit self-insurance, either by individual firms or employer groups. In twelve states, the state competes with private insurance carriers in writing workers' compensation insurance. Six states have established exclusive state funds and do not permit competition from private carriers (although, in some of these states, firms may still self-insure).

Workers' compensation insurance is big business. Over two million families may receive a workers' compensation indemnity benefit in a single year. The annual cost of workers' compensation insurance programs is nearly $25 billion a year. With over five hundred firms selling compensation insurance, the 1982 combined market shares of the top four and eight sellers were only 24.4 and 38.4 percent respectively.

The Veterans System.

Although most work injuries come under the realm of workers' compensation, war injuries fall into a different category, since the Veterans Administration maintains a large bureaucracy that provides injured veterans with income, medical care, and rehabilitation. In 1986, for example, veterans compensation cost 5.7 billion dollars; means-tested pensions for disabled veterans (although not disabled as a result of wartime injury) produced expenditures of 1.1 billion; the bill for veterans hospitalization came to 2 billion dollars; and the various veterans rehabilitation programs cost .4 billion dollars. With the aging of the World War II veteran cohort, disability-related veterans expenditures represent an important area of future inquiry. Despite the influence of veterans programs on American social welfare policy, these programs seldom receive the consideration of policy analysts.

The Private System.

Not all disability expenditures arise from the public sector or from actions mandated by the government. A private system, interlocked with the public system, consists of private disability and health insurance and makes limited use of public and private rehabilitation programs. At the end of 1985, 28 million people had short-term disability protection that was provided by private companies; nearly twenty-six million people had some form of private long-term disability income protection with nearly 75 percent of this coverage coming in the form of group policies. The typical long-term policy replaced about 60 percent of a person's pre-disability income and required the person to apply for social security benefits before receiving private benefits (Health Insurance Association of America, 1987, pp. 7-8).

The linkages between the various parts of the private and public disability systems are far from straightforward and create many disincentives for the labor force participation of disabled persons. Many people buy insurance policies to cover the risks arising from specific events, such as an automobile accident or an airplane crash. But such policies do not preclude the person or the insurance company from utilizing the tort system to claim damages from a reckless driver or a negligent airline. The resulting system contains significant overlaps among the various insurance coverages and requires complicated rules to establish which program or party should make the "first payment" to the disabled person. Even with these rules, many possibilities exist for a disabled person to be "overinsured," and any recourse to the tort system typically involves the significant passage of time to conclude a case, with the effect of diminishing incentives for rehabilitation and labor force participation.

Direct Employment Incentives.

Each of these income maintenance-rehabilitation systems emphasizes income transfers, rather than the creation of jobs. Other laws and programs attempt to create direct incentives for the employment of handicapped persons. These programs range from "booster" programs, such as the President's Committee on Employment of Persons with Disabilities, which publicizes the capabilities of handicapped persons, to more direct requirements, such as laws that mandate accessible workplaces on the part of federal contractors or reserve certain jobs for the blind.

To understand these "job creation" programs, one might divide them into three groups. Some of the programs modify federal or state labor standards in an effort to encourage the employment of persons with disabilities. Others set aside portions of funds or reserve particular activities for handicapped persons, and still others prohibit prejudice on the part of employers in hiring workers or require modifications of the work place.

Amendments to the 1938 Fair Labor Standards Act illustrate the first group of programs. The Act, which has traditionally been a major administrative responsibility of the Department of Labor through its Division of Labor Standards, sets minimum wages and maximum hours for all enterprises "engaged in commerce." Section 14 (c), added in 1966, authorizes the Secretary of Labor to issue special minimum wage certificates to handicapped workers based on their individual productivity. To protect these workers, the Section required employers to pay at least half of the minimum wage to workers with handicaps, unless the state Vocational Rehabilitation agency certified that a worker's productivity warranted a lower rate of pay. By the mid-1980s, the Department estimated that nearly 90 percent of the handicapped workers with special certificates were exempt from the 50 percent requirement. In 1986 Congress authorized the Secretary to issue a single certificate for an entire workshop or other place of business (Department of Education, 1988, p. 30).

Two examples of the second type of program date from 1938. In that year, Congress passed both the Randolph-Sheppard Act and the Wagner-O'Day Act, both of which affected the employment of blind persons. The former reserved employment in "vending areas" selling refreshments and other sundries in federal facilities for the blind. The latter authorized federal agencies to procure selected commodities (pens) and services from sheltered workshops serving the blind. In 1971, Congress broadened this program to include other severely disabled individuals (Department of Education, 1988, p.159).

The third group of programs, those dealing with civil rights and architectural barriers, may be the most important of all. Here we concentrate on Section 5 of the Rehabilitation Act of 1973. This act, passed without a great deal of Congressional scrutiny, contains the following famous passage: "No otherwise qualified handicapped individual in the United States shall, solely by reason of his handicap, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity conducted by an Executive agency or by the United States Postal Service." Other subsections require affirmative action in federal employment and the achievement of accessibility in federal buildings through the creation of a board charged with ensuring compliance with the Architectural Barriers Act of 1968. Section 503 obligates any contractor entering into a contractual agreement with the federal government in excess of $2,500 to take "affirmative action to employ and advance in employment persons with handicaps" (Scotch, 1984). Limited to the activities of the federal government, this Act nonetheless constitutes America's most sweeping civil rights statute on behalf of persons with disabilities.

As this essay is written, Congress has taken the Americans with Disabilities Act of 1989 under active consideration. Conceded a real chance of passage, this legislation would extend civil rights protection to cover such areas as private employment and public accommodations. It would bring the level of civil rights protection for people with disabilities to parity with other minority groups.

Civil rights laws reflect the influence of what Harlan Hahn has called the minority model of disability policy (Hahn, 1985, p. 8). Previously, Hahn states, thinking about handicapped persons centered on their functional limitations, and public policy focused exclusively on the problems of the handicapped individual. The model accepted the environment as a given. The minority model, in contrast, recognizes that the environment itself is subject to policy decisions. According

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to this view, public policy should not help individuals to cope with the existing environment so much as it should combat prejudice and discrimination and, in so doing, alter that environment. Hahn concludes that the "extension of civil rights" should be the "primary means of resolving the problems of disabled citizens."

This overview of disability programs makes it clear that civil rights have not yet become the major vehicle for solving the problems of disability. Instead, the American disability system consists of a social security track, complete with medical care and limited rehabilitation services, a public assistance track, also with medical care and rehabilitation services, a work injury track, special tracks for veterans, and a private sector track. In addition, laws that alter minimum standards of employment, that set aside money or jobs, and that attempt to guarantee employment also characterize the American disability system. One cannot help but note that part of the system subsidizes retirement and encourages withdrawal from the labor force; another part explicitly seeks to encourage the entry of the handicapped into the labor force.

The Disincentive Studies

This description of the American disability system raises two major empirical issues concerning the labor force participation of persons with disabilities. One concerns the effect of income transfers on the labor force participation of handicapped persons. The other involves the efficacy of the various measures, whether rehabilitation services or civil rights statutes, designed to encourage the labor force participation of people with disabilities. Do these measures work, or do their costs outweigh their benefits?

First, let us consider what might be called the disincentive issue. Building on the labor-leisure trade off, economists have long recognized the potential disincentive effects of transfer payments that are conditioned on the withdrawal of the beneficiary from the labor force. In particular, they have studied the effects of Social Security Disability Insurance on labor force participation. Leonard (1986), in a masterful summary of these studies, notes that they agree on the direction but not the magnitude of the effect. Although we do not understand this issue as well as we do the effects of minimum wages or unions on labor supply, Leonard concludes that the studies have succeeded in "drawing attention to the labor supply effects of SSDI, demonstrating the link between the growth of the SSDI beneficiary rolls and the decline in labor force participation rates, and establishing some range within which the true labor supply effect of social security disability is likely to fall" (Leonard, 1986, p. 64).

The studies stem from an easily observed trend. The nonparticipation rate of males, ages 45-54, reached a low of 3.5 percent in the early 1950s, and then it began to climb just as the Social Security Disability Insurance program got underway (Parsons 1984). The early studies of Gastwirth (1972), Swisher (1973) and Siskind (1975) made simple comparisons of the increases in the disability rolls and the decline in labor force participation. Hambor (1975) took economic factors into account, noting that the applicant rate increased with the unemployment rate. That suggested a degree of discretion in the labor force participation of disability insurance applicants that made the decision to seek disability benefits appear more like other labor supply decisions.

Using data from the National Longitudinal Surveys, Parsons (1980) estimated 1969 labor force participation rates of men who were 45 to 59 years old as a function of SSDI benefits, welfare benefits, wages, a mortality index, age, and unemployment. He took wages in 1966 as a proxy for expected labor force earnings. He also utilized mortality from 1969 to 1976 as a proxy for 1969 health status. A person who died during this period was assumed to be in poor health in 1969. He found that the elasticity of nonparticipation with respect to the replacement rate was 0.63 and that it varied greatly with the mortality index.

Parson's findings are disputed by Haveman and Wolfe (1984) and Haveman, Wolfe and Warlick (1984) who estimated a relatively inelastic labor supply response to disability benefits, although not specifically to SSDI benefits. Haveman and Wolfe used a 741-person subsample of 45- to 62-year-old men in the 1978 Michigan Panel Study of Income Dynamics (PSID). They focussed on what caused labor force withdrawal rather than on the attractiveness of the SSDI program. They estimated a single grouped response to a set of disability-related transfers, including SSDI, Supplemental Security Income, veterans' disability benefits, other disability pensions, welfare and help from relatives.

Haveman and Wolfe found an elasticity of labor force non-participation with respect to disability income that ranged from .0205 in a replication of Parson's specifications to .0056 with the addition of dependent benefits, additional controls, selectivity corrections, and eligibility adjustments. Haveman, Wolfe and Warlick (1984) discovered an extremely nonlinear response with much larger elasticities among more disabled persons and those with lower earnings. We agree with Leonard that these results caution against the use of simple linear models to capture widely varying behavior.

Leonard (1976) used the same data as Parsons and found that 30 percent of the variance in weeks out of the labor force in 1965 among men could be explained by variation in disability benefits, conditional on self-reported health, age and family characteristics.

In a 1979 study, Leonard used a sample of 1,685 men aged 45 to 54 drawn from the 1972 Social Security Survey of Health and Work Characteristics merged with social security beneficiary records and earnings histories. The major econometric problem for the study was that a large proportion of the sample were out of the labor force and had no observable wage. Because of the nature of the available data, Leonard was forced to use specific health conditions as a proxy for impairment status, and these health conditions give no indication of severity. Despite these limitations in data, he found that Social Security Disability Insurance had a large and significant effect in reducing labor supply: his estimate of the elasticity of labor supply in response to expected SSDI benefits was 0.35. A $180 increase in yearly benefits was discovered to increase the proportion of SSDI beneficiaries in the population by 1 percentage point. Leonard's work supports the hypothesis that a rise in SSDI benefits relative to the wage rate causes more men to apply and receive SSDI benefits and also causes their labor force participation rate to fall.

In an overall review of these and other studies, Leonard (1986) notes that, for all of their differences, the economic models of the labor force participation decision agree that expected income is an important variable. In practice, the studies differ in how expected incomes are imputed. We would add that these studies also demonstrate that the health condition of the person is an important variable, but the studies differ widely in how such a condition is measured. In short, disability transfer programs lead to some reduction in labor supply; how much is unclear. And, clearly, subjective factors, such as the perceived chances of obtaining benefits, play a role here. We know, for example, that disability benefits have been harder to get at some times than at others.

In workers' compensation (WC), as in social security disability insurance, the number of claimants bears a positive relation to the benefit level, but in WC, unlike SSDI, employers pay differential rates that may affect their behavior. WC utilizes the concept of experience rating. Small employers pay a nominal premium price (the manual rate) that reflects the expected accident and claims experience of all firms in the same line of business. Although nearly 85 percent of U.S. firms are manually rated, these firms employ less than 15 percent of those who work (Worrall and Butler, 1986). The remaining firms pay a premium that is based on a weighted average of their actual and expected loss experience. As premiums vary by firm size, so may safety incentives.

In WC, unlike SSDI, we must consider the effect of benefit levels on the provision of safety measures by employers, recognizing that firms may offer wage differentials to compensate for increased risk to workers. Smith (1979) has reviewed the literature. Arnold and Nichols (1983), Butler (1983), Dorsey (1983), and Dorsey and Walzer (1983) each finds compensating differentials for risk-bearing and a trade-off between the acceptance of WC benefits and wages.

A number of economists have examined the relationship between benefit levels, waiting periods, retroactive periods, and claims frequency. The research has been done for cross-sections, time-series, and pooled cross-sections time-series data at the level of the establishment, industry, or the state. In two 1985 papers, for example, Worrall and Butler model the transition from a disabled to a nondisabled state as a function of wage, WC benefit, and other control variables. The principal finding is that the duration of disability varies directly with WC benefits and indirectly with the wage. Other research indicates that injury rates or claims frequency vary directly with WC benefits (Butler 1983; Butler and Worrall 1983; Chelius 1973, 1974, 1977, 1982, 1983; Ruser 1984; Worrall and Butler 1984; Worrall and Appel 1982).

In general, the findings from the WC experience echo those derived from an examination of the SSDI record. Applications and perhaps risk bearing and injuries are quite sensitive to changes in the levels of benefits. There is also some evidence that the duration of nonwork spells associated with the receipt of WC benefits is a function of the level of those benefits. Not a great deal of research has been conducted on the impact of a "full" replacement rate, but one should keep in mind that a significant number of people who receive WC benefits also obtain benefits from other programs.

The Efficiency of Rehabilitation

The efficiency of rehabilitation constitutes the second broad area of empirical studies that focus on the labor force participation of disabled persons. Here we focus on two aspects of the problem: the effectiveness of rehabilitation in general and the effectiveness of programs that attempt to rehabilitate beneficiaries of income maintenance programs, particularly workers' compensation.

Broadly defined, the rehabilitation process aids a person's recovery from the effects of an illness or injury and assists in a person's entry or reentry into the labor market. Both the public and private sectors provide rehabilitation. In the public sector, the Vocational Rehabilitation program has emphasized the treatment of the severely disabled, a category that includes mental retardation and mental illness. Services include medical diagnosis and some treatment, education and training, counseling and guidance, and placement. Counselors employed by the state VR agencies provide the bulk of the counseling and guidance services and may arrange for education, training, or work evaluation services from vendors.

Although some private sector providers have been retrained by insurance carriers for years, the growth of the private sector accelerated after California adopted mandatory rehabilitation as part of its workers' compensation program. Private sector counselors may provide or arrange for the same range of services as in the VR program, but their clientele tends to be restricted to accident cases, particularly workers' compensation cases.

It is not easy to discern the market failure that would justify the public VR program. Traditionally, the program has justified its existence on the grounds that its benefits outweigh its costs. However, it has been reluctant to adopt modern evaluation techniques, and it has resisted any attempts to measure demand for its services by some sort of an experimental voucher system.

The problem of "pre-program dip" in earnings is more intense here than in the employment and training programs. Eligibility for VR depends on the existence of a physical or mental impairment that interferes with the person's labor market chances. The majority of clients who enter the program show zero wages at entry. The program defines a person who remains in a job for 60 days as a successful closure. Since average costs of services seldom exceed several thousand dollars and benefits are defined as the difference between the zero wages at entry and the positive earnings at closure projected over the person's working life, the program tends to display a favorable cost-benefit ratio.

Although program evaluations, initially crude, have become more sophisticated in recent years, they still suffer from the absence of a true control group to measure the treatment effects, of an outcome measure of long duration, and of a disability status measure that takes severity into account (Worrall, 1988). As a means around the first problem, Dean and Dolan (1988) have used status 30 persons, people admitted to the program who received no substantial services, perhaps because they dropped out or moved away, as a comparison group. For an outcome measure, they utilize earnings data for VR samples matched with records of the state employment service, thus allowing a longer period of follow-up than the traditional 60 days. This work show a positive treatment impact for some groups given a particular array of services. Gibbs (1988) uses a hazard rate analysis to explore a different outcome variable. Instead of earnings, he looks at duration of work and nonwork spells and finds, using status 30 persons as a comparison group, some positive treatment effects.

As with so much of the work in the disability area, the measures of disability status tend to be crude, usually medical condition classifications. Dean and Millberg (1988) have experimented with using functional assessment measures to standardize for health condition.

In general, efforts to rehabilitate the beneficiaries of income maintenance programs pose different problems than those faced by the public VR programs. One might consider, for example, the many problems involved in the rehabilitation of workers' compensation clients. Which of the many compensation recipients should be selected to receive rehabilitation services? What services should be offered? Who should authorize, provide, and pay for the services?

Examples abound of various approaches to these problems. California makes rehabilitation a matter of right for the employee at the employee's request. That request could come at any time including after the expiration of permanent partial benefits. In California, this provision, combined with the requirement that the employer/carrier is obligated to provide services once the plan has been approved, has led to a very costly system. Massachusetts has no provisions for a fixed number of days after which the case must be screened, but the employee, in indicated cases, must meet at least once with the rehabilitation personnel in the WC agency. New York maintains a voluntary system under which the carrier is supposed to screen after a specified period, with little policing and no penalties for non-compliance.

States differ over the meaning of mandatory services. In California, the term means a plan where the provision of services is mandatory on the part of the carrier but the employee cannot be compelled to accept services. In Minnesota, Florida and New Hampshire, by way of contrast, the employee may be penalized for noncooperation or refusal, although such penalties are difficult to enforce. Someone who does not want to receive rehabilitation services makes a problematic candidate for the rehabilitation process.

The actual provision of rehabilitation falls into two stages: evaluation for suitability and executing the rehabilitation plan. These activities might be conducted by personnel from the workers' compensation agency, private sector rehabilitation personnel, or by the state VR agency. Minnesota emphasizes that it does not require rehabilitation but merely an evaluation for rehabilitation and the statute so states. However, even in that state, some carriers claim that by the time they go through the expense of evaluation, they might as well get into the rehabilitation plan.

The cost burden of rehabilitation differs by who performs the services. If the workers' compensation agency carries out evaluations and possibly supervises the delivery of services, the costs may well be met as part of the agency budget. That budget may be financed by separate state appropriation or by an assessment on all carriers and self-insurers in the state. If the VR program performs the services, the costs might be met by the regular VR agency budget which is based on an 80 percent federal share and a 20 percent state share. However, some VR programs bill insurance carriers for services. Private sector counselors and providers, engaged in for-profit enterprises, charge for services at an hourly rate set by the state or fixed by market forces.

By far, the most common method of meeting rehabilitation expenses involves payment by the insurance carriers. Under the theory of workers' compensation, the worker waives rights to full recovery for all damages suffered. Instead, the worker receives compensation for a portion of wage losses, medical care designed to relieve the effects of the injury, and, presumably, rehabilitation services. Rehabilitation services thus become part of the compensation benefits and the worker has an entitlement only to benefits designed to restore his or her pre-injury condition.

The Effectiveness of Civil Rights Measures

Civil rights laws represent a different way to increase the labor force participation of handicapped persons. These statutes typically benefit people on the edge of the labor market who have not received a permanent entitlement to income maintenance benefits. Some argue that these people suffer the stigma of being handicapped and require special legal protection to overcome the forces of prejudice. Alternatively, such people might benefit from government-mandated accommodation of the work site to match their abilities.

Although these laws pose many analytical issues, the study of civil rights statutes remains in its infancy. The very notion of submitting these laws to economic analysis strikes many as beside the point. Advocates argue that the proposals of civil rights movements on behalf of blacks and women were not subjected to cost-benefit tests. Instead, Congress and the Courts implicitly ruled that civil rights transcended costs. Put another way, no cost was too high to pay in return for securing racial or sexual equality. Advocates of handicapped rights make similar arguments. As one has written, "Economics cannot be the issue around which decisions turn. The Supreme Court has long ago said that civil rights cannot be abrogated simply because of cost factors" (Bowe, 1980).

Economists have nonetheless attempted to assess the costs and benefits of enforcing civil rights laws. The Berkeley Planning Associates, for example, have analyzed the costs of making "reasonable accommodations" in order to employ disabled persons (Collignon, 1986). The term can be found in regulations that accompany Section 5 of the Rehabilitation Act of 1973, such as in the definition of a handicapped person as one "who is capable of performing a particular job, with reasonable accommodation to his handicap." The concept is elusive. Much of the law emphasizes the inherent productivity of handicapped people; the concept of reasonable accommodation implies a cost to making the handicapped worker as productive as his peers. To charge the handicapped person this cost by paying him or her less, however, invites a charge of wage discrimination, which is also against the law. But someone must bear the costs of accommodation.

Some factors mitigate the inherent dilemma. Fragmentary evidence indicates, for example, that expensive job modification is seldom required to accommodate handicapped workers. At times the required adjustment is relatively simple (O'Neill, 1976). One survey of 250 people in California with rheumatoid arthritis found that the ability to schedule one's own hours of work was a good indicator of whether a person would return to work (Yelin, 1979). In addition, the costs of accommodation can be used to off-set other costs. If the firm has invested a lot of specific training in the worker and if the firm faces the alternative of high disability maintenance costs for the worker, it pays to invest in accommodation to the point where the marginal costs of accommodation equal the dollars saved in pension costs and the costs of training a new worker.

Stating these conditions is a much easier task than measuring the various costs and benefits. Collignon (1986) notes the paucity of hard data. No studies exist of reasonable accommodation in firms that are not federal contractors and hence covered by Section 503. All of the studies have examined the accommodation of workers already employed by the firm and not the accommodation of workers seeking entry to the firm. Furthermore, physical barriers in the workplace do not appear to be as significant as the worker's training and education in explaining a disabled person's success in the labor market, yet we would like to know more about the relative weights of these factors.

Another undeveloped area of inquiry concerns the costs of discrimination against the handicapped. Becker's notions of discrimination (1957) might usefully be extended to cover discrimination against the handicapped. The question becomes measuring an employer's taste for discrimination to determine how much he is willing to spend in order to have a labor force free of handicapped workers. Evidence does show that prejudice varies by the rate of impairment and that in general handicapped workers receive lower rates of return to education, experience, and health. Employers also appear to believe that disabled workers entail higher costs, because they are costly to supervise and less flexible in the jobs that they can do.

These findings imply that there would be benefits to eliminating discrimination. As Johnson (1986) notes, such an action would make for "more efficient use of labor, improved efficiency in the human capital market, and increase incentives for labor force participation by impaired workers." Nor, Johnson argues, can the market eliminate this prejudice, because much of the discrimination can be characterized as monopsonistic discrimination or as statistical discrimination.

Policy Implications

Where does this dense tangle of institutional and empirical detail leave us? Our overview of the field suggests that the economist would do better altering institutions at their margins rather than questioning the existence of those institutions. Furthermore, as our treatment of rehabilitation under workers' compensation suggests, we must be wary of making global generalizations. In short, institutions, by their very existence, constrain our behavior, and the institutions are extremely segmented, so that disability benefits in, say, Massachusetts are not the same as disability benefits in Illinois.

The situation resembles the ability of the economist to alter the minimum wage. Despite abundant studies of employment effects, minimum wages endure. At best, economists have succeeded in restraining the rise in minimum wage rates and in pointing out the differences between the wish of high wages and the deed of accomplishing them. Similarly, the disincentive studies show us that rising disability benefit rates lower labor force participation rates, but the best we can hope for is that policymakers understand some of the costs of their actions when they raise rates.

Economists too often assume a degree of conceptual certainty that simply does not exist in the area of disability. The policy issues in vocational rehabilitation, for example, lie beyond simple calculations of costs and benefits. Because we know that the program will survive, the issue is not whether the program can justify itself but rather how it might operate more efficiently, given the equity constraints imposed by Congress that dictate its mix of clients. Studies indicate that the program has an impact on some clients. Now these studies need to be extended to provide administrators with guidance on choosing clients and deciding the mix of services that would yield the most efficient outcomes.

Another promising line of reform lies in the relationship between income maintenance and rehabilitation. Here we might reconsider the relationship between VR and SSDI. The thrust of the VR programs and the rehabilitation efforts of the agencies which pay benefits, whether SSA or state workers' compensation agencies, is quite different. VR may give preference to whatever group Congress wishes to target, but essentially it is dealing with persons who are motivated enough to apply to the program. The objective of the VR program is to improve those persons and possibly to restore them to the maximum functioning capacity given their physical and mental condition.

Most of the benefit programs have narrower objectives. They seek to save benefit dollars by providing services designed to restore beneficiaries to a work status. In the SSA program, the problem arises of identifying potential rehabilitees early enough. Once a person is on the rolls, that person has been disabled for at least six months and possibly for years. The applicant has been through a rather severe test in which the objective is to maximize impairment so as to qualify for benefits. All of these requirements make sense within the framework of the program's primary mission of providing retirement benefits as guards against the moral hazard problem.

We think that the objective of this program may now appropriately be broadened to include rehabilitation. Surely one neglected area is the identification of persons who are potential rehabilitation beneficiaries before they even apply to the program. These persons have probably been receiving short-term benefits from an employer or state plan for some months before they apply to the SSDI program. In addition, a measure such as the current "Social Security Work Incentives Act" deserves consideration. This bill, introduced as HR 4680 in the last session of Congress, would allow workers to retain their Medicare benefits and some of their benefits, even after they returned to work. There might also be some tentative experiments with differential rates for disability insurance, depending on the employer's experience in keeping disabled people at work.

Workers' compensation programs, which have the advantage of earlier identification than SSDI, have experimented with various methods to select rehabilitation candidates. States are natural laboratories of experiment, but with some exceptions (Gardner, 1985, 1988), they have taken little advantage of the opportunities to test the efficiency of the various systems. Some random assignment studies are probably feasible in the state programs even if they are not acceptable in the VR programs.

Another variable of interest in the state WC programs concerns the methods of paying benefits. Radically different incentive and disincentives are set up by reason of these variations. Some states, such as New Jersey, pay permanent partial benefits (the costliest category of benefits) on an impairment basis. An award, once fixed, will not be changed if the worker goes back to his job. Such a system provides few disincentives for the worker to become rehabilitated once an award has been made. However, once the amount has been fixed, the employer has few incentives to encourage a rehabilitation program.

Other states fix benefits on the basis of loss of earnings or loss of earnings capacity. Here the employer has incentives to encourage rehabilitation if it means a reduction in benefits, but the employee has reasons to avoid any program which will reduce his weekly benefit amounts. Granted, the programs have bewildering and complex ways to assess benefits; still, much can be said about the efficacy of these different incentive structures. As an example, Minnesota has begun to track its experiences under a fascinating system of differential benefits, designed with the incentive structure of both the employer and employee in mind.

Nor, in reforming our disability system, would we wish to dismiss the potential contributions of the private sector. Some firms have begun to experiment with a concept called disability management at the workplace, in which they make an effort to prevent their workers from leaving the labor force. The evidence of these efforts is largely anecdotal, but some firms have discovered, in the time honored manner of this literature, that hiring their handicapped is good business (Berkowitz and Berkowitz, 1989).

If the details of reform are sketchy, the general direction remains clear. We have developed a costly and reasonably adequate system of income benefits for the disabled. We now need to give more thought to the adequacy of our rehabilitation efforts, with the full realization that rehabilitation, like any complex social goal, cannot simply be mandated into existence. We submit this examination of disability definitions, rates, and systems as proof of that fact.

REFERENCES

Aging America: Trends and Projections, 1987 - 1989 edition. (Prepared by the U.S. Senate Special Committee on Aging, American Association of Retired Persons, Federal Council on Aging and U.S. Administration On Aging), Washington, D.C., 1988.

Arnould, Richard J. and Lem M. Nichols. "Wage-Risk Premiums and Workers' Compensation: A Refinement of Estimates of Compensating Wage Differentials." Journal of Political Economy. 91, 2 (1983), pp. 332-340.

Ball, Robert M. "Social Security Across Generations." In John Gist (ed.), Social Security and Economic Well-Being Across Generations. Washington, D.C.: American Association of Retired Persons, 1988, pp. 11-38.

Becker, Gary. The Economics of Discrimination. Chicago, IL: University of Chicago Press, 1957.

Berkowitz, Edward D. Disabled Policy: American Programs for the Handicapped. New York, NY: Cambridge University Press, 1987.

Berkowitz, Edward D. and Monroe Berkowitz. "Challenges to Workers' Compensation: An Historical Perspective." In John D. Worrall and David Appel (eds.), Workers' Compensation Benefits: Adequacy, Equity and Efficiency. Ithaca, NY: ILR Press, 1985, pp. 158-179.

Berkowitz, Edward D. and Monroe Berkowitz. "Incentives For Reducing the Costs of Disability." In Jack Meyer and Ken McLennan (eds.), Reforming Healthcare. Boulder, CO: Westview Press, 1989.

Berkowitz, Edward D. and Monroe Berkowitz. "The Survival of Workers' Compensation." Social Science Review. 58, 2 (June 1984), pp. 259-280.

Berkowitz, Monroe. "Functioning Ability and Job Performance as Workers Age." In Michael E. Borus, Herbert S. Parnes, Steven H. Sandell and Bert Seidman (eds.), The Older Worker. Industrial Relations Series, 1988, pp. 87-112.

Berkowitz, Monroe. "Rehabilitation and Workers' Compensation in New York." In Research Papers of the Temporary State Commission on Workers' Compensation and Disability Benefits. Albany, NY, April 1986.

Berkowitz, Monroe, Martin Horning, Stephen McConnell, Jeffrey Rubin, and John D. Worrall. "An Economic Evaluation of the Beneficiary Rehabilitation Program." In Jeffrey Rubin (ed.), Alternatives in Rehabilitating the Handicapped - A Policy Analysis. New York, NY: Human Services Press, 1982.

Boston Women's Health Book Collective. The New Our Bodies, Ourselves. New York, NY: Simon and Schuster, 1984, p. 7.

Bowe, Frank. Rehabilitating America: Toward Independence for Disabled and Elderly People. New York, NY: Harper and Rowe, 1980.

Brehm, Henry P. and Thomas V. Rush. "Disability Analysis of Longitudinal Health Data: Policy Implications for Social Security Disability Insurance." Journal of Aging Studies. 1988, pp. 2, 4, 379-399.

Butler, Richard J. "Wage and Injury Rate Response to Shifting Levels of Workers' Compensation." In John D. Worrall (ed.), Safety and the Work Force: Incentives and Disincentives in Workers' Compensation. Ithaca, NY: ILR Press, 1983, pp. 61-86.

Butler, Richard J. and John D. Worrall. "Workers' Compensation: Benefit and Injury Claim Results in the Seventies." Review of Economics and Statistics. 65, 4 (1983), pp. 580-589.

Chelius, James R. "An Empirical Analysis of Safety Regulation." In Supplemental Studies for the National Commission on State Workmen's Compensation Laws, Vol. 3, Washington, D.C.: U.S. Government Printing Office, 1973, pp. 53-66.

Chelius, James R. "The Control of Industrial Accidents: Economic Theory and Empirical Evidence." Law and Contemporary Problems 38 (Summer/Autumn 1974), pp. 700-729.

Chelius, James R. "The Influence of Workers' Compensation on Safety Incentive." Industrial and Labor Relations Review 35, (1982), pp. 235-242.

Chelius, James R. "Workers' Compensation and the Incentive to Prevent Injuries." In John D. Worrall (ed.), Safety and the Work Force: Incentives and Disincentives in Workers' Compensation. Ithaca, NY: ILR Press, 1983, pp. 154-160.

Chelius, James R. Workplace Safety and Health. Washington, D.C.: American Enterprise Institute, 1977.

Chelius, James R. and Robert S. Smith. "Experience Rating and Injury Prevention." In John D. Worrall (ed.), Safety and the Work Force: Incentives and Disincentives in Workers' Compensation. Ithaca, NY: ILR Press, 1983, pp. 128-137.

Collignon, Frederick C. "The Role of Reasonable Accommodation in Employing Disabled Persons in Private Industry." In Monroe Berkowitz and M. Anne Hill (eds.), Disability and the Labor Market. Ithaca, NY: ILR Press, 1986, pp. 196-241.

Conley, Ronald. "A Benefit-Cost Analysis of the Vocational Rehabilitation Program." Journal of Human Resources. Vol. 4, pp. 226-252.

Conley, Ronald. *The Economics of Vocational Rehabilitation*. Baltimore, MD: Johns Hopkins University Press, 1965.

Dean, David and Robert C. Dolan. "Establishing a Mini-Data Link." In Monroe Berkowitz (ed.), *Measuring the Efficiency of Public Programs*. Philadelphia, PA: Temple University Press, 1988.

Dean, David and William Millberg. "Using Better Measures of Disability Status." In Monroe Berkowitz (ed.), *Measuring the Efficiency of Public Programs*. Philadelphia, PA: Temple University Press, 1988.

Dorsey, Stuart. "Employment Hazards and Fringe Benefits: Further Tests for Compensating Differentials." In John D. Worrall (ed.), *Safety and the Work Force: Incentives and Disincentives in Workers' Compensation*. Ithaca, NY: ILR Press, 1983, pp. 87-102.

Dorsey, Stuart and Norman Walzar. "Compensating Differentials and Liability Rules." *Industrial and Labor Relations Review*. 36 (July, 1983), pp. 642-654.

Fries, James F. "Aging, Natural Death and the Compression of Morbidity." *The New England Journal of Medicine*. 303, 3 (July 17, 1980), pp. 130-135.

Fries, James F. and L. Crapo. *Vitality and Aging: Implications of the Rectangular Curve*. San Francisco, CA: W. H. Freeman, 1981.

Gardner, John A. Vocational Rehabilitation in Florida Workers' Compensation: Rehabilitants, Services, Costs and Outcomes. Cambridge, MA: Workers Compensation Research Institute, 1988.

Gardner, John A. Vocational Rehabilitation in Workers' Compensation: Issues and Evidence. Cambridge, MA: Workers Compensation Research Institute, 1985.

Gastwirth, Joseph L. "On the Decline of Male Labor Force Participation." Monthly Labor Review. 95 (October, 1972), pp. 44-46.

Gibbs, W. Ernest. "Changes in Duration of Employment and Unemployment Spells." In "Enhanced Understanding of the Economics of Disability - Final Report." Grant No. G008300151 from the National Institute of Disability and Rehabilitation Research. Available from Virginia Department of Rehabilitative Services, 1988.

Gruenberg, Ernest M. "The Failure of Success." Milbank Memorial Fund Quarterly/Health and Society. 55 (Winter 1977), pp. 3-24.

Haber, L.D. State Disability Prevalence Rates: An Ecological Analysis of Social and Economic Influences on Disability - Final Report. National Institute on Disability and Rehabilitation Research, Switzer Fellowship for Research in Disability Statistics, 1987.

Hahn, Harlan. "Changing Perceptions of Disability and the Future of Rehabilitation." In Leonard G. Perlman and Gary Austin (eds.), Social Influence in Rehabilitation: Blueprint for the 21st Century. Arlington, VA: National Rehabilitation Association, 1985.

Hambor, John C. Unemployment and Disability: An Econometric Analysis with Time Series Data. Staff Paper no. 20. U.S. Department of Health, Education and Welfare, Social Security Administration, Office of Research and Statistics, 1975.

Haveman, Robert H. and Barbara L. Wolfe. "The Decline in Male Labor Force Participation: Comment." Journal of Political Economy. 92,3 (June, 1984), pp. 532-541.

Haveman, Robert H., Barbara Wolfe, and Jennifer Warlick. "Disability Transfers, Early Retirement and Retrenchment." In Henry Aaron and G. Burtless (eds.), Retirement and Economic Behavior. Washington, D.C.: Brookings Institution, 1984, pp. 65-93.

Haynes, R. Brian, David L. Sackett, D. Wayne Taylor, Edward S. Gibson, and Arnold L. Johnson. "Increased Absenteeism From Work After Detection and Labeling of Hypertensive Patients." The New England Journal of Medicine 299, 14 (October 5, 1978), pp. 741-744.

Health Insurance Association of America. 1986 - 1987 Source Book of Health Insurance Data. Washington, D.C.: Health Insurance Association of America, 1987.

Human Services Research Institute. Compilation of Statistical Sources on Adult Disability. Cambridge, MA. Prepared under contract to the National Institute of Disability and Rehabilitation Research. Contains basic information about a number of surveys such as an assessement of quality, coverage, sampling methods, tape format, but no results or findings. Coverage from 1978. Covers health related surveys, program surveys, transportation and residential facilities in addition to employment-related surveys. Information on eight different employment-related surveys presented, 1986.

Johnson, William G. "The Rehabilitation Act and Discrimination Against Handicapped Workers: Does the Cure Fit the Disease?" In Monroe Berkowitz and M. Anne Hill (eds.), Disability and the Labor Market. Ithaca, NY: ILR Press, 1986, pp. 242-261.

Leonard, Jonathan. "Labor Supply Incentives and Disincentives for Disabled Persons." In Monroe Berkowitz and M. Anne Hill (eds.), Disability and the Labor Market, Ithaca, NY: ILR Press, 1986, pp. 64-94.

Leonard, Jonathan. "On the Decline in the Labor Force Participation Rates of Older Black Males." Master's Thesis, Harvard College, 1976.

Manton, Kenneth G. "Changing Concepts of Morbidity and Mortality in the Elderly Population." Milbank Memorial Fund Quarterly/Health and Society 60 (Spring 1982), pp. 183-244.

Manton, Kenneth G. and Eric Stallard. "Temporal Trends in U.S. Multiple Causes of Death Mortality Data: 1968-1977." Demography 19 (November 1982), pp. 527-547.

McNeil, John M. Disability, Functional Limitation, and Health Insurance Coverage: 1984/1985: Data from the Survey of Income and Program Participation. Current Population Reports. Household Economic Studies, Series P-70, No. 8. Washington, D.C.: Bureau of the Census, 1986.

McNeil, John M. Labor Force Status and Other Characteristics of Persons with a Work Disability: 1982. Current Population Reports, Special Studies, Series P-23, No. 127. Washington, D.C.: Bureau of the Census, 1983.

Newquist, Deborah. "Trends in Disability and Health Among Middle-Aged and Older Persons." Unpublished paper. Los Angeles, CA: Andrus Gerontology Center, University of Southern California, June 1984.

O'Neill, David. Discrimination Against Handicapped Persons: The Costs, Benefits, and Inflationary Impact of Implementing Section 504 of the Rehabilitation Act of 1973 Covering Recipients of HEW Financial Assistance. Report to the Office for Civil Rights. Arlington, VA: Public Research Institute, 1976.

Parsons, Donald O. "The Decline in Male Labor Force Participation." Journal of Political Economy. 88, 1 (February, 1980), pp. 117-134.

Parsons, Donald O. "Disability Insurance and Male Labor Force Participation: A Response to Haveman and Wolfe." Journal of Political Economy. 92, 3 (1984), pp. 542-549.

Robinson, Pauline K. "Age, Health and Performance." In James E. Birren, Pauline K. Robinson and Judy E. Livingston. Age, Health and Employment. Englewood Cliffs, NJ: Prentice-Hall, 1986.

Ruser, John W. "Workers' Compensation Insurance, Experience Rating and Occupational Injuries." U.S. Bureau of Labor Statistics, Office of Research and Evaluation. Washington, D.C. Mimeo, 1984.

Scotch, Richard. From Goodwill to Civil Rights. Philadelphia, PA: Temple University Press, 1984.

Siskind, Frederic B. "Labor Force Participation of Men, 25-54, by Race." Monthly Labor Review. 98 (July, 1975), pp. 40-42.

Smith, Robert S. "Compensating Differentials and Public Policy: A Review." *Industrial and Labor Relations Review*. 32, 3 (April, 1979), pp. 339-352.

Social Security Administration. *Report of the Disability Advisory Council*. Washington, D.C., U.S. Department of Health and Human Services, 1988.

Social Security Administration. *Social Security Bulletin Annual Statistical Supplement 1984-1985*. Washington, D.C.: U.S. Government Printing Office, 1985.

Sullivan, Oscar M. and Kenneth O. Snortum. *Disabled Persons: Their Education and Responsibility*. New York, NY: Century, 1926.

Swisher, Idella G. "The Disabled and the Decline in Men's Labor Force Participation." *Monthly Labor Review*. 96 (November, 1973), p. 53.

U.S. Department of Education, Office of Special Education and Rehabilitative Services, Clearinghouse on the Handicapped. *Summary of Existing Legislation Affecting Persons With Disabilities*. Washington, D.C.: U.S. Government Printing Office, August 1988.

Verbrugge Lois M. "Longer Life but Worsening Health? Trends in the Health and Mortality of Middle-Aged and Older Persons." *Milbank Memorial Fund Quarterly/Health and Society* 62 (Summer 1984), pp. 475-519.

Victor, Richard B. "Experience Rating and Workplace Safety." In John D. Worrall and David Appel (eds.), Workers' Compensation Benefits: Adequacy, Equity, and Efficiency. Ithaca, NY: ILR Press, 1985.

Victor, Richard B. Workers' Compensation and Workplace Safety: The Nature of Employer Financial Incentives. Santa Monica, CA: Rand Corporation, 1983.

Victor, Richard B., Linda Cohen, and Charles Phelps. Workers' Compensation and Workplace Safety: Employer Response to Financial Incentives. Santa Monica, CA: Rand Corporation, 1982.

Virginia Department of Rehabilitative Services. "Enhanced Understanding of the Economics of Disability - Final Report." Grant No. G008300151 from the National Institute of Disability and Rehabilitation Research, 1988.

Wing, Steve and Kenneth G. Manton. "A Multiple Cause of Death Analysis of Hypertension-Related Mortality in North Carolina, 1968-1977." American Journal of Public Health. (July 1981), pp. 823-830.

Worrall, John D. "Benefit and Cost Models." In Monroe Berkowitz (ed.), Measuring the Efficiency of Public Programs. Philadelphia, PA: Temple University Press, 1988.

Worrall, John D. and David Appel. "Some Benefit Issues in Workers' Compensation." In John D. Worrall and David Appel (eds.), Workers' Compensation Benefits: Adequacy, Equity, and Efficiency. Ithaca, NY: ILR Press, 1985, pp. 1-18.

Worrall, John D. and David Appel. "The Wage Replacement Rate and Benefit Utilization in Workers' Compensation Insurance." Journal of Risk and Insurance. 49, 3 (September, 1982), pp. 361-371.

Worrall, John D. and Richard J. Butler. "Heterogeneity Bias in the Estimation of the Determinants of Comp Loss Distributions." Paper presented at the 1984 American Risk and Insurance Association Meetings. August, 1984. Minneapolis, MN.

Worrall, John D. and Richard J. Butler. "Some Lessons From the Workers' Compensation Program." In Monroe Berkowitz and M. Anne Hill (eds.), Disability and the Labor Market. Ithaca, NY: ILR Press, 1986.

Worrall, John D. and Richard J. Butler. "Workers' Compensation: Benefits and Duration of Claims." In John D. Worrall and David Appel (eds.), Workers' Compensation Benefits: Adequacy, Equity, and Efficiency. Ithaca, NY: ILR Press, 1985, pp. 57-70.

Ycas, Martynas. "Recent Trends in Health Near the Age of Retirement: New Findings from the Health Interview Survey." Social Security Bulletin 50 (February 1987), pp. 5-30.

Yelin, Edward. "From Social Theory to Social Policy: Social Class and the Epidemiology of Disability among Persons with Rheumatoid Arthritis." Ph.D. Dissertation. Department of City and Regional Planning, University of California, Berkeley, 1979.

24. LABOR FORCE PARTICIPATION OF DUAL-EARNER COUPLES AND SINGLE PARENTS

Ellen Galinsky

The Families and Work Institute
(formerly of Bank Street College)

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LABOR FORCE PARTICIPATION OF DUAL-EARNER COUPLES AND SINGLE PARENTS

Ellen Galinsky

The Families and Work Institute

I. BACKGROUND

A. Changing Families

In 1988, the Census Bureau reported that of women who had a child in the year preceding its June 1987 survey, 51 percent were now in the labor force compared with 31 percent in June 1976. The New York Times greeted this news with a Father's Day editorial entitled "Mothers with Babies and Jobs," calling it a "monumental change:

> Except for one thing. It's a transformation society does not yet accept. Perhaps passing this newest milestone finally will jolt America into confronting the reality. What was once unusual is now the norm.
>
> New York Times, June 19, 1988

- In 1940, 8.6 percent of women with children 18 and under were in the labor force. By 1987, that figure had reached 65 percent.
- In 1976, 40 percent of the mothers of preschoolers were employed as compared to 58 percent in 1987.
- Currently 53 percent of the women with children under three hold jobs.

U.S. Department of Labor, Bureau of Labor
Statistics, 1988b

Labor force projections indicate that these changes are here to stay (Hofferth & Phillips, 1987). By 1995, two-thirds of the mothers of preschoolers and three-fourths of the mothers of school-aged children will be in the labor force. The rapid increase in women's employment has obviously affected men. Currently, 60 percent of men in the labor force are married to wives who also hold jobs. Current estimates are that fewer than half of all marriages will remain intact for thirty years or more (Glick & Lin, 1986b). Between 1970 and 1985, the number of one-parent families more than doubled and between 1970 and 1984, the fraction of poor people living in mother-only non-elderly families climbed from 34 to 43 percent (Duncan & Rodgers, 1987). Fifty-three percent of single mothers with children under six (or 1.9 million workers) are in the labor force (U.S. Department of Labor, Bureau of Labor Statistics, 1988b, 1989). The increased numbers of employed mothers is frequently associated with materialistic social values, i.e., that many women work for luxury items. If they only tightened their belts, most mothers could stay home. Labor force statistics, however, reveal quite a different picture. Two-thirds of employed women are either the sole support of their families or married to men who earn less than $15,000 per year (Select Committee on Children, Youth and Families, 1984).

As our population continues to age, more and more families will be providing care for one or more elderly relatives or friends. Nationwide data on the number of employees who regularly care for the elderly are not yet available, but surveys of Fortune 500 companies show that between 20 and 30 percent of the employees care for elderly parents on a regular basis (Travelers, 1985; Friedman, 1987; Galinsky & Staines, 1989). In one study, between 28 and 44 percent of the employees expect to assume elder care responsibilities within the next five years (Lurie, Galinsky, & Staines, 1989). Elder care is not just everyday care; it also includes emergency care when an otherwise healthy family member falls, has a stroke, or is otherwise incapacitated (Rogers, 1988). Thus, the number of employees reported to have elder care responsibilities may, in fact, be low.

B. Changing Labor Force

Just as families are changing, so too is the labor force. The labor force is becoming increasingly female:

- Sixty-four percent of all new entrants into the labor force between 1987 and 2000 will be women (Johnston, 1987).
- Minorities will constitute 29 percent of new entrants to the labor force between 1987 and 2000. This represents twice their current share (Johnston, 1987).

In addition, the workforce is aging and growing smaller:

- Population growth has been dropping from an annual increase of 1.9 percent in the 1950s to a projected 0.7 percent in 2000 (Johnston, 1987).
- The number of young workers (between 16 and 24) will drop eight percent between 1987 and 2000, representing a decrease of two million (Johnston, 1987). This young generation has been dubbed "the baby bust generation." Companies are already feeling labor shortages. In a survey of 71 Fortune 500 companies conducted by the staff of the Families and Work Institute, six out of 10 reported contending with a diminished supply of potential new hires (Galinsky & Friedman, in preparation).
- As a result of these trends, the average age of the workforce is increasing from 36 to 39 by 2000 (Johnston, 1987).

C. Changing Economy

America is undergoing a rapid and massive change. In the face of aggressive new global competition, the economy of today is quite different than the economy of even a decade ago. Mergers, acquisitions, downsizing, and the contingent workforce are more common. In addition, the economy itself is shifting to an information base, and thus different skills and management styles will be needed. In an information society, a premium is placed on knowledge, technical capacity, and ongoing problem-solving. No longer will the skills and attitudes established in schools during the industrial era be relevant: memorizing facts, reciting answers, competing. In an information-based economy, employees will need to know how to plunge into gray and often contradictory areas of knowledge, to pursue the unknown, to think creatively and globally, to be continuous learners, to adapt to change, and to work cooperatively in interdisciplinary teams.

These changes in family and workplace demographics and in the economy have given rise to new issues. For employers, it means attracting a qualified workforce in a time of impending labor shortages. It also means managing and retaining an increasingly diverse workforce within the context of a global economy.

For the family, these changes have given rise to prevalent work/family stress. Our research team has found that at least different two of every five employees surveyed are having problems managing the conflicting demands of jobs and family life (Galinsky, 1988a).

In a period of such rapid change, there can be a gap between assumption and reality, between human needs and institutional response, between practice and policy. In the following paper, I will address the impact of these social and economic transformations and will propose policy recommendations.

II. ISSUES RELATED TO LABOR FORCE PARTICIPATION OF DUAL-EARNER COUPLES AND SINGLE PARENTS

This section examines three areas: dependent care, time and leave flexibility, and the psychological aspects of jobs. Within each area, I will assess what is known about the impact of related problems on employee productivity and family well-being, and I will discuss how employers have responded. Then I will discuss the incentives and obstacles to increased company activity, thus laying the groundwork for the policies recommended in the last section of the paper.

A. Dependent Care

1. The Dimensions of Child Care Problems

For the past decade, our research team has been investigating the specific nature of child care problems that employees face and then assessing how these problems are linked to productivity. On the basis of our research and that of others, the following issues appear most significant.

Child care is difficult to find and obtain. Although there is a debate about whether or not there is a shortage of child care (U.S. Department of Labor, 1988a), from the perspective of employed parents, there is a shortage. In a nationally representative survey our research team found that one of every three parents of infants and toddlers and one of every four parents of preschoolers had a "difficult" or a "very difficult" time finding child care (Galinsky & Hughes, 1987). In some regions, among certain employee populations, those percentages are even higher. In needs assessments of employees in three companies in suburban New Jersey, 48 percent reported that locating an adequate selection of child care was a major or significant problem; 65 percent of these parents with infants had a difficult time finding suitable care (Galinsky, 1988a).

Learning about available sources of child care represents only part of this process. Parents may be unable to obtain child care because of long waiting lists, expense, the commute, or program requirements (for example, the hours don't accommodate parent's work schedule). Fifty-four percent of the parents in the New Jersey companies reported that it had been "difficult" or "very difficult" to make their current child care arrangements (Galinsky, 1988a).

In our studies (Galinsky & Hughes, 1987; Galinsky, 1988a), difficulty finding out about and obtaining child care was one of the major predictors of parents' absenteeism.

Some child care arrangements are more satisfactory than others. No studies to date have investigated how variations in child care quality, independently assessed, affect employees on the job although Marybeth Shinn of New York University and I (in preparation) have such a study in progress.

A number of studies indicate that different types of child care affect parents at work. Emlen and Koren (1984) of Portland State University have found, for example, that having a latchkey child is significantly linked to higher rates of absenteeism. The average employee misses seven to nine days of work per year (Hedges, 1977; Emlen, 1987); when their children are in self-care -- at home alone or with siblings -- employees miss approximately thirteen days of work. Although women's rates of absenteeism are generally higher than men's, in this case, men's slightly exceed women's: they miss an average of 13.4 days compared to women's 13 days (Emlen, 1987). One explanation for this is that men take increasing responsibility for their children as the children grow older (Galinsky & Hughes, 1987).

Parents are forced to put together a patchwork system that tends to fall apart. Employed parents do not make just one child care arrangement for each child. During the elementary school years in particular, the child may be sent to one neighbor before school and to another neighbor after school. These arrangements may differ on various days of the week.

At Merck & Company, Inc., a pharmaceutical company based in Rahway, New Jersey, employees averaged 1.7 arrangements per child (Galinsky & Hughes, 1985). The same finding has been reported by Shinn and her colleagues (Shinn, Ortiz-Torres, Morris, Simko & Wong, 1987).

Not only is the patchwork child care system stressful when it works according to plan, but many arrangements are tenuous and fall apart. At Merck, we found that the more arrangements parents had, the more likely these were to break down (Hughes, 1987). In another study, one in four employed fathers and mothers had to scramble to make last-minute arrangements because their regular arrangements had broken down two to five times in the past three months (Galinsky & Hughes, 1987).

The breakdown of child care arrangements was significantly linked to every negative outcome in our studies. Workers who had to make more last-minute, ad hoc arrangements were more likely to arrive at work late, leave early or be absent from work altogether. They were more likely to spend unproductive time on the job because they were worried about their children. These parents were prone to higher levels of stress and experienced more stress-related health problems. They were even more likely to suffer greater tension and less companionship in their marriages and to feel less satisfied as parents.

Among other reasons that parents experience breakdown in their child care arrangements is the high turnover among child care professionals. The annual separation rate (number of workers leaving the field) for child care staff is 35.2 percent. Only workers such as gas station attendants and dishwashers leave their fields more frequently. The average child care professional has been in this field for 2.7 years; an astounding 62 percent of the entire child care workforce have been employed in child care for less than three years. In comparison, elementary school teachers average 12.4 years in that occupation (U.S. Department of Labor, 1988b).

One cause of the high turnover is readily apparent: nationally, in-home child care providers earn an average of $94 per week, and child care center-based staff earn $191. In comparison, pre-kindergarten and kindergarten teachers (whose educational credentials may be similar to those of child care workers) earn an average of $332 weekly (U.S. Department of Labor, Bureau of Labor Statistics, 1988a).

Child care is expensive. Despite the low salaries, the cost of child care strains many families economically, running from 10 to 25 percent of their family budget. Lower-income families spend a much greater proportion of their budgets on child care than wealthier families do, often as much as they pay for housing (Hofferth, 1988). This can be an especially difficult problem for single parents who are the poorest segment of the labor force (Duncan & Rodgers, 1987).

2. The Dimensions of Elder Care Problems

Elder care means assisting with the daily living activities or emergency care for an elderly relative dependent who is chronically frail, ill, or disabled. There has been less research on the impact of elder care on employees' productivity than child care , although it is much needed. According to two recent needs assessments conducted by Resources for Child Care Management and our research team, one in five employees worries about an elderly dependent while on the job (Lurie, Galinsky & Staines, 1988). Studies indicate that employees who care for elderly dependents have higher levels of stress and stress-related illness than other employees, even those with children (Creedon, 1987). In a survey of employees at 33 companies, researchers found that 55 percent of the women and 50 percent of the men reported being interrupted at work as a result of their elder care responsibilities (Regional Research Institute for Human Services, 1987).

3. The Impact of Gender and Marital Status

Evidence from numerous studies on employee dependent care responsibilities uniformly indicates that women employees experience more problems than men. Women take more responsibility in arranging dependent care, maintaining it, and responding if it falls apart (Hughes & Galinsky, 1988; Burden & Googins, 1986; Fernandez, 1986). In one study, married mothers often had the same obligations as single parents (Fernandez, 1986). When it comes to cost of services, however, single parents are at a severe economic disadvantage, which perhaps forces them to settle for poorer quality care (Hofferth, 1988).

In absolute numbers, the amount of family work that men contribute is increasing slowly, whereas the proportion is changing more rapidly, moving from a 20 percent share to 30 percent in the past decade (Pleck, 1986). Furthermore, men take a larger share of responsibility as the children get older (Galinsky & Hughes, 1987; Stewart, Van Tuyl, Mobley, Salvador, & Walls, 1986). Men also contribute to the provision of elder care (Neal, Chapman, & Ingersoll-Dayton, 1988).

When men assume dependent care and other child-rearing tasks, they are affected in the same ways as women. Burden and Googins (1986) found that the amount of responsibility, not the gender of the employee, was linked to depression and decreased well-being. Thus, the assumption that dependent care problems are solely a women's issue is clearly erroneous.

4. The Impact of Maternal Employment

Another frequent assumption holds that having a working mother is harmful to young children. Research challenges this notion. The effect of maternal employment depends on numerous factors, including the attitudes of the mother and father about working, job stress, other family stress, but most notably, the quality of the child care children receive (Galinsky & David, 1988; National Center for Clinical Infant Programs, 1987).

There is strong and conclusive evidence that the quality of child care can have a lasting impact on children's development, most strongly affecting children's social development, scholastic achievement, and motivation as learners. For example, research by Howes (1988) reveals that when infants and toddlers experience numerous changes of caregivers, they perform less competently on standardized measures in the preschool years. A study by Vandell and Powers (1983) found that when children were unoccupied and bored in four-year-old programs, they had more trouble with relationships at age eight. A study at the University of North Carolina-Chapel Hill showed that when discipline is haphazard and social skills are not taught, children behave more aggressively in kindergarten (Finkelstein, 1982). The National Day Care Study revealed that group size, staff-child ratio, and the relevant training of teachers is linked to children's achievement and social competence (Abt Associates, 1979). Finally, the Perry Preschool Program has charted the potential long-term cost savings of high quality early childhood programs: less school remediation, fewer school dropouts, reduced juvenile justice infractions, and lower teenage pregnancy rates (Berrueta-Clement, J.R., Schweinhart, L.J., Barnett, W.S., Epstein, A.S., & Weikart, D.P., 1984). Clearly the early education and care children receive is of utmost importance and can have long-lasting effects on the skill and competence of our future workforce.

5. Business Initiatives To Address Dependent Care Problems

Although research indicates that child care problems are pervasively experienced throughout the workforce, negatively affect parents' performance on the job and can impede children's development, only 4,100 of the nation's six million employers have developed policies and programs to address these problems (Friedman, 1988). The most responsive companies tend to be large, to employ a sizeable number of women, to be non-unionized, to experience high growth, to have young, entrepreneurial leadership, and to be experiencing labor shortages (Galinsky, Hughes & David, in press; Friedman, 1983; American Society for Personnel Administration, 1988). Thus, the employees served are likely to be the most privileged. The initiatives tend to create a larger gap between the have and have-not employees, especially the working poor and single parent mothers (Galinsky, 1988c).

Furthermore, while many assume that helping employees with child care means providing on-site centers, most employers buy into the existing child care system within their community. Thus, one sees more initiatives in parts of the country with the most well-developed dependent care systems. Elder care initiatives are at the pioneering stage, although the demographics of the aging population indicate that such initiatives may eclipse child care in demand.

Rather than categorizing the range of options, I will describe how initiatives specifically address the problems reported by research. In doing so, I will describe Child Care Resource and Referral, Elder Care Consultation and Referral, Corporate Contributors, on- and near-site child care, child care consortia, care for mildly sick children, comprehensive cafeteria plans, flexible spending accounts, Long Term Care Insurance vouchers, discounts, visiting nurse services and respite care.

Assistance in locating and obtaining child care and elder care. Over 1,000 companies now provide Child Care Resource and Referral (CCR&R) to help employees locate child care (Friedman, 1988). As this service is contracted on a per employee cost, it is easily used by small and large employers alike.

As previously discussed, employees also have problems obtaining child care. If the supply of local child care is inadequate, then the referral process is useless. Thus, some large corporations have initiated efforts to stimulate the supply of quality child care through recruitment and training. In 1984, IBM initiated the first nationwide R&R network through its contract with Work/Family Directions. With continued support from IBM as well as funds from local communities and other corporate clients, Work/Family Directions has helped develop over 50,000 new providers of child care (including family day care homes, child care centers, and in-home providers).

A large-scale effort to increase the supply of family day care is the California Child Care Initiative. Developed by the BankAmerica Foundation, this public-private partnership of thirty-three organizations funds community-based R&R agencies for recruitment and training. To date, over $3 million has been contributed to the program; in the first two years, 7,900 new child care spaces were created.

IBM pioneered Elder Care Consultation and Referral in February 1988. More than 8,000 employees used the service during its first year, often for emergency help (such as locating assistance for a parent or in-law who has become ill). This program helps familiarize employees with the available range of services for the elderly, including medical, custodial, housing, legal, and counseling services. Other employers provide information about elder care services through seminars, support groups, handbooks, hotlines, and Employee Assistance Programs.

Initiatives to improve the quality of dependent care. Besides recruiting and training providers, CCR&R's also counsel parents on how to judge child care and follow up to help parents assess their observations. In this way, parents can make higher quality, more stable child care arrangements.

Companies are beginning to recognize that if they are going to buy into the community child care system, they must address the quality of this system, specifically the high turnover of staff caused by low wages. One of the more interesting child care enhancement efforts has been undertaken by 3M's McKnight Foundation, which has given $468,000 to child care in

Saint Paul/Minneapolis. Child care programs that serve a proportion of low-income children may apply for small grants to be used toward salary or benefit enhancement. More important, all programs are given intensive training in budgeting.

Companies are also addressing the quality issue by creating on- or near-site child care centers. Approximately 200 companies, 600 hospitals, and 22 government agencies have such programs. On-site care is not necessarily the first choice of either parents or management, and on-site programs are relatively rare. On-site corporate adult day care centers are extremely rare, but Stride-Rite is planning to turn its on-site child care center into an intergenerational program.

The majority of on- or near-site child care programs have been started by large companies because of the expense and the number of employees needed to fill a child care program, yet, it is possible for a small company to do so. Through creative fund-raising that included a one-cent-an-hour withholding agreed to by union members, Greico Brothers, a clothing manufacturer with 800 employees, established a center for 90 children.

A more common option for small companies is to enter into a child care consortium. Consortia arrangements seem to function best if a neutral third party, such as a CCR&R agency or an independent consultant, helps the companies work out their policies and procedures and can arbitrate difficult issues such as which company gets the one space in the program that has opened up.

Other companies provide corporate contributions to existing programs in return for preferential admission. Rather than build its own center, Bell Labs arranged for a local agency to expand its centers and provide a certain number of slots for Bell Lab employees.

Organizations that have addressed the issue of the frequent breakdown in child care have determined that a major cause of this breakdown is children's illness. Johnson & Johnson plans to provide care for mildly sick children at its New Brunswick on-site center. Another way that companies help employees care for sick children is to contract with health care organizations to provide in-home care, a portion of which the company pays for. Still another program provides subsidies to local organizations or hospitals to establish sick child care facilities.

Initiatives to help employees pay for dependent care. Companies assist employees with dependent care costs primarily through benefit options. Section 125 of the IRS Code allows employers to offer workers a choice of benefit options from a "menu" of taxable and nontaxable benefits. The program may take the form of a comprehensive cafeteria plan or a Flexible Spending Account (FSA). A comprehensive cafeteria plan provides a core set of benefits and the use of flexible credit to purchase more of the core benefits or other optional benefits that are either taxable or nontaxable. Credits are generated by employer contributions (based on salary and tenure) and are placed in a credit account for the employee.

Friedman (1988) estimates that over 1,500 companies now provide FSA's. Employees may reduce their salaries by up to $5,000 and deposit these pre-tax dollars into a company account designated to reimburse child care or elder care expenses. The size of the company is not a factor in the establishment of this account, which essentially involves meeting the requirements of Section 125 of the IRS code, setting up a dependent care assistance plan according to Section 129, and the on-going cost of administration. There are some disadvantages for employees -- they cannot use both the Individual Dependent Tax Credit and an FSA; furthermore, if the FSA money has not been used up by the year's end, it must be forfeited.

One of the most promising new developments in benefits to assist elder care needs is Long Term Care Insurance, which helps employees pay for long term care for themselves, dependent children, spouses, or parents. Designed to fill gaps in Medicaid and Medicare coverage, long term care insurance plans may cover home health services, adult day care, and respite care.

The second way that companies help employees pay for dependent care is through a direct financial subsidy or voucher. Approximately 50 companies pay for a percentage of child care costs at programs chosen by the parent. The company may pay the provider directly or reimburse the employees. The voucher may be offered as a flat fee, a percentage of cost, or be limited to those below a certain family income level. Another 100 companies have negotiated employee discounts with child care providers (Friedman, 1988). Typically, a child care center lowers its fee by 10 percent and the employer contributes 10 percent of the fees so the employees receive a 20 percent reduction in their child care costs. Companies also provide reimbursement or direct subsidies to employees for visiting nurse services, thereby helping employees to attend work when medical problems arise. They also cover some of the costs of hiring a caregiver, respite care, so employees can enjoy a brief break from their caregiving responsibilities.

6. The Impact of Dependent Care Initiatives

Three national studies have examined employer perceptions of the benefits of corporate child care programs. Perry (1982) surveyed 58 employers (predominantly hospitals) with on-site centers: 88 percent indicated they thought the program increased their ability to attract employees, 72 percent noted lower absenteeism, and 65 percent felt that it improved employees' attitude toward the employer. Magid (1983) studied 204 companies with child care programs; employers ranked the top benefits as improved ability to recruit, improved morale, and lowered absentee rate. A survey of 178 companies (Burud, Aschbacher, & McCroskey, 1984), found that 90 percent of the managers thought the program had improved morale, 85 percent felt that the company's ability to recruit had been positively affected, and 85 percent felt public relations had been more positive.

There have been only a few methodologically sound pre/post investigations of corporate child care. One of the best is a new study conducted by Marquart (1988) from Cornell University. She compared users of employer-sponsored child care programs (on-site center and R&R) with non-users and found that users were more likely to report that the program contributed positively to their recruitment, retention, and their recommending their employer to other prospective workers. In her recent review of this research, Friedman (in preparation) found that on-site child care seems to help with retention, an interesting result in light of increasing labor shortages.

7. Obstacles to Expansion of Corporate Dependent Care Initiatives

Numerous companies are considering the development of child care assistance. A May 1988 survey conducted by the American Society for Personnel Administration (ASPA) revealed that 50 percent of the members who responded to the questionnaire were considering or planning some form of child care initiative in the coming years. This finding is important because many of their members are small or mid-sized establishments. A survey of large Fortune 500 companies likewise found that 86 percent planned to develop new work/family initiatives (Galinsky & Friedman, in preparation). The incentive most frequently reported was recruitment and retention.

Many road blocks, however, crop up between the "thinking about" and the implementation stage in developing child care assistance. The difficulties most often cited in surveys are: cost, equity, liability, lack of information, and lack of clarity of governmental procedures (ASPA, 1988; Galinsky & Friedman, in preparation). Less is known about obstacles to elder care initiatives but one can assume they are similar to child care concerns.

Cost. When employers cite cost as a deterrent, they are usually assuming that addressing employees' child care needs means creating an on- or near-site center. A high-quality center is expensive, especially for small companies, and especially if companies subsidize the fees so lower income employees can afford to send their children there. Other programs, such as Child Care Resource and Referral and Flexible Spending Accounts are not nearly as expensive.

Phillips from Merck & Company (1989) feels that cost is the wrong question. He feels that companies will lose money in the future if they don't provide a family supportive environment. He has calculated the average cost of replacing an employee at Merck at 1.5 times the annual salary of an exempt position and .75 times the annual salary of a non-exempt position. He states, "Given high turnover costs, avoiding turnover for just a few employees will yield excellent paybacks"(p. 6).

Liability. Companies assume that child care (on- or near-site) will breed lawsuits; as the designated "deep pocket," the company will suffer negative publicity and high legal costs. This is a very real concern. To my knowledge, there has never been a lawsuit in a corporate sponsored day care center, presumably because the pioneering companies that have developed on-site programs have insisted that quality be high. Informal inquiries to companies (who are generally large and in a growth mode) with on- or near-site programs reveal that insurance is not a problem. Silverman from BMF Marketing estimates that half a million dollars of liability coverage can be purchased for $40 to $60 per child; accident insurance is $4 per child (Silverman, personal communication, 1988). The child care industry has an average of one claim per 1,000 child care days; most claims are under $300, of the trip and fall variety.

Insurance is a critical problem for non-corporate child care programs especially family day care providers who often find it difficult to obtain an insurer and pay for the coverage. Furthermore, the implications of the 1986 tax reform legislation in which reserves may be taxed is not clear. Some speculate that it may exacerbate these problems.

Equity. Most organizational policies are predicated on the notion of equity: every employee should be able to take equal advantage of all policies or benefits. Certain work/family initiatives, such as flexible time policies or the Flexible Spending Account, meet this criterion. Others, such as R&R or on- or near-site centers do not. In the name of equity, some corporations resist programs that serve specific groups or locations.

There are several ways companies have addressed the equity issue. Some have developed programs that address employees' dependent care needs rather than simply child care or elder care. Thus, a potentially larger number of employees are served.

Other companies have taken a life-cycle approach. They note that although five to 15 percent of an employee population may use Child Care Resource and Referral in one year, over a longer time frame, a considerably larger pool of employees is served.

A third approach companies have taken is to pose the issue directly to employees. In the needs assessments companies conduct, they ask, "How would you feel about the company establishing a work/family program, even if you did not directly benefit?" The number of employees in favor of such a move is extremely high: generally from 85 to 95 percent. The resistance generally comes from men who have not experienced these problems firsthand and deem them outside the realm of their organization's responsibility, or from women who have had to cope without these supports and resent providing them for others (Lurie, Galinsky & Hughes, 1988; Burden & Googins, 1986; Fernandez, 1986).

Lack of regulatory clarity. One potential obstacle to the development of elder care programs is the lack of clarity about whether for-profit corporations can contract with government-funded Area Agencies on Aging for special support and C&R services for their employees. Until this confusion is cleared up, companies may be reluctant to get involved.

The lack of regulatory clarity about Flexible Spending Accounts has been a disincentive to companies. Because it has taken a long time to develop implementation regulation and because there is a possibility that the amount of salary reduction allowable will be greatly reduced from $5000, many companies have adopted a "wait-and-see" attitude about this work/family initiative. The fact that employees have to have a relatively high income to make use of FSAs has also been a disincentive to companies who want to provide a more equitable benefit. Employees have to have enough disposable income to reduce their salaries, pay for child care from this lowered base and then wait to be reimbursed.

Another problem with FSAs from the employer point of view has to do with the IRS regulated schedule of reimbursement. If an employee submits a receipt for more money than has been accrued but less than the total amount in the account, the company is obligated to reimburse the employee immediately. If the employee quits before the amount deducted has been accrued into the account, the company can't recover this loss -- a risk some companies consider unacceptable.

Still another disincentive is the relatively low employee usage that some companies with FSAs report. This lower rate can be attributed to several factors. First, there is the fact, as previously stated, that salary reduction plans are most helpful to higher income employees. Secondly, employees cannot "double dip"; that is, claim a Dependent Care Tax Credit and make use of an FSA. Third, employees must have child care providers who are willing to give their social security number to their parents who in turn provide this information as part of the documentation necessary for reimbursement. As a result, those parents using "underground" providers who do not pay taxes on their child care income do not want to use an FSA. Finally, some parent employees are dissuaded from using FSAs because they know that they must use up the funds in their account by year's end or forfeit the money.

In general, the paperwork required by government regulations is a very real problem for companies. Simply gathering data for the Section 89 tests for non-discrimination is expensive, time-consuming and confusing; furthermore, although Section 89 is already in effect, there are no regulations about how to proceed and there is a strong movement to reform this section. Overwhelmed by the vast changes in every benefits area affected by law, benefits managers are struggling simply to administer their current programs and stay in compliance. The result is a dampened willingness to consider any new, innovative, or creative ideas that could help employees manage their work and family responsibilities (McFarland, personal communication, 1989).

Union resistance. Unions have opposed flexible benefits out of concern that when employees can opt out of core benefits such as health coverage and pension plans, then these protections may be eroded. This is quite a valid concern. Unions are, however, quite supportive of other dependent care initiatives.

Assumptions/Information. The biggest obstacle to increased provision of work/family initiatives is the assumption that these concerns fall out of the realm of the workplace (Galinsky & Friedman, 1986; Galinsky, 1986). Accordingly, it is up to the individual to solve dependent care problems. Corporate involvement is seen as an unwarranted interference in family life.

This assumption has been challenged lately by managers and employers who conclude that because community dependent care systems are inadequate, employees cannot find and pay for quality dependent care on their own; that it is in the employer's self-interest to provide employees with resources for solving these problems. The employer does not interfere but simply makes programs available. Employers see these initiatives as business investments that will help attract and retain qualified employees.

The preceding section on obstacles indicates that several of the barriers to increased involvement may be less of a problem than they are perceived to be. Thus, adequate information is necessary. Even for those companies who want to develop dependent care programs, knowing where to turn for information and advice is unclear.

8. Implications for Policy

In formulating policy, several findings from this review of the issues should be considered.

1. Research evidence is beginning to accumulate that providing corporate care assistance is potentially in the companies' business interest.
2. As projected labor shortages grow, it will be even more in the business community's interest to develop programs that help recruit and retain employees.
3. In terms of the competence and skills of the future workforce, it is also more cost-effective to address the issue of early childhood services now than to invest in remediation and retraining later.
4. As the population continues to age, companies should be considering the impact of increased elder care responsibility on employees and engage in strategic planning.
5. Because lack of information is an important barrier to increased activity, information should be disseminated.
6. Special attention should be paid to employees who work for small companies, especially single parent mothers.
7. Since companies tend to buy into existing dependent care systems and do so more where the systems are well developed, government has an important role in strengthening the existing systems.
8. Since the working poor and many single parent families do not necessarily work for companies that will support employees' needs for dependent care, general strategies to strengthen the dependent care system will positively affect these populations.

As Kahn and Kammerman (1987) state:

> The time has come for the society -- and thus state and federal governments -- to acknowledge child care as a major need and participation in child care as normative. Child care services should evolve and become as much a part of the social infrastructure as schools, libraries, parks, highways, and transportation. (p. 246)

B. Flexible Time and Leave Policies

1. Dimensions of Time and Leave Problems

The need for time flexibility. Simply providing dependent care assistance will not address the needs of dual-earner couples and single parent employees adequately. In employee surveys, employees consistently request greater time flexibility as a means to improve the quality of their family lives while maintaining or improving their productivity (Galinsky, 1986; Hughes & Galinsky, 1988; Galinsky & Hughes, 1987).

Studies have found that lack of control over work hours is associated with negative outcomes (Piotrkowski & Crits-Christoph, 1982). Employees also face problems when their work schedules are incompatible with the schedules of other family members and with community institutions such as child care programs, schools, doctors, dentists, banks, etc. (Mason & Espinoza, 1983; Staines & Pleck, 1983; Pleck, Staines & Lang, 1980).

The need for shortened working hours. Research has also documented the negative repercussions of working long hours. In one nationally representative survey, we found that only four percent of the men and 23 percent of the women worked less than a 40 hour week; in fact, 37 percent of the men and 13 percent of the women worked over 50 hours. Employees who worked more hours had higher levels of stress (Galinsky & Hughes, 1987). In the Merck study, working longer hours was associated with more conflict between job and family responsibilities for men and more stress-related health problems for women (Hughes & Galinsky, 1988).

Working part-time can also have negative repercussions. Employees who wish to cut back their hours may be unable to afford a reduction in income and benefits, and diminished job mobility.

The need for leave policies. Certain circumstances may require absence from work altogether. The birth or adoption of a child is the most obvious. Employees may also need time away from the job for family emergencies.

2. Business and Governmental Initiatives to Address the Need for Time and Leave Flexibility

Programs that provide time flexibility. Under flexitime, employees can choose when to arrive at work and when to leave, as long as they accumulate the prescribed number of hours per day or week. There is generally a core time when all employees must be present each day. A recent survey of 521 Fortune 500 companies found that one-half plan to expand flexible time programs (Christensen, in preparation).

Programs that reduce working hours. The most common form of reduced hours is part-time work. Part-time schedules may include proportions of days, weeks, months, or years. Part-timers may be temporary or permanent employees. Temporary part-timers typically do not receive benefits such as health insurance, but under ERISA, employees who work a minimum of 1,000 hours receive pro-rated vacation and sick leave. Eighteen percent of the American workforce is part-time; a few companies are experimenting with professional part-time positions but the majority of part-time jobs are still non-professional. Career mobility is a major issue for all part-timers and has yet to be dealt with effectively.

Voluntary reduced time enables employees to reduce work time and pay by five to 50 percent for a specified period of time (usually 6-12 months). Workers retain their benefits and seniority status on a pro-rated basis. Companies have begun to offer this option to help employees meet family, personal, or educational needs as well as an alternative to layoffs. One of the most well-known V-Time programs was established by New York State for state employees.

A third means of reducing work time is job sharing, whereby two workers share the responsibilities of one full-time job, share separate but related assignments, or have unrelated part-time assignments and simply share a budget line.

Another way that companies have been providing flexibility, both to themselves and to employees, is through the increased use of contingent workers (temporary and independent contract workers). Until recently, part-time and temporary work has primarily involved clerical workers, but a trend is emerging in which professional and technical workers (doctors, lawyers, computer specialists) are being hired as temporary workers. Data reveals that the majority of the contingent work-force is female.

Observers of this move toward an increased contingent workforce are concerned that these individuals are sacrificing basic rights of full-time employment such as health benefits, pensions and the opportunity for advancement. Companies are concerned about decreased loyalty and, concomitantly, decreased productivity and quality of work. The challenge is to ensure that "these types of hiring practices enhance, rather than hurt, women's earning power, both in the short and long terms" (Christensen, in preparation).

Programs that provide leaves. The most common need for leave is for childbirth; the most common solution is disability leave. Companies are not required to provide disability coverage for their employees, but the 1978 Pregnancy Discrimination Act (PDA) requires that those companies who do must include pregnancy. A recent nationwide survey of 2,620 pregnant working women (National Council of Jewish Women, 1987a) found that 83 percent were offered at least six weeks of job-guaranteed benefits by formal policy. Kammerman, Kahn, and Kingston (1983) estimate that only 40 percent of employed women in the United States are entitled to at least six weeks of paid disability leave following childbirth.

Five states -- California, New Jersey, New York, Rhode Island, and Hawaii -- mandate employer participation in temporary disability insurance programs that provide disabled male and female employees with partial wage replacement up to 26 weeks. These long-standing state programs have proven to be cost-effective wage-replacement systems for workers who are unable to perform their jobs due to non-work related disability.

In the last two sessions of Congress, Federal legislation has been introduced to guarantee unpaid leave for mothers and fathers to care for a new baby (either biological or adopted) or to care for ill family members. This legislation, called Parental Leave or Family Leave, has been hotly debated. It has been championed as a means to allow parents to bond with their children and contested as the first wave of a series of mandated benefits that would prove unaffordable to companies.

While the Federal discussion continues, 10 states -- Wisconsin, Rhode Island, Minnesota, Maine, Connecticut, Oregon, Washington, West Virginia, Oklahoma and Vermont -- have passed parental leave legislation. Nearly 27 other states have also introduced similar bills. A number of companies have begun to develop parental leave policies. One of the most noteworthy is IBM's three-year leave plan. Employees are required to work some time during the three years in order to maintain his or her skills. In return, IBM guarantees a comparable job after three years, although not necessarily in the same location.

In company focus groups, when employees discuss childbirth and other leave policies, many request a gradual transition back from leave using part-time work. Another frequently requested provision is the right to have personal days. Employees dislike being forced to lie when their children are sick and want these days off to be legitimate. In response to this finding, Johnson & Johnson will introduce a policy of "Family Emergency Absences" in July 1989. Warner-Lambert has developed a policy explicitly allowing employees to stay home with sick children. At Becton Dickinson in Orangeberg, New York, employees have a time bank: every year they are allowed 69 3/4 hours from which they may draw time-off in two- or three-hour increments for any legitimate personal or family reason.

3. Impact of Time and Leave Policies on Productivity

A number of studies have assessed the impact of flexible time arrangements on productivity. A meta-analysis of 92 organizations found that alternative work schedules reduced absenteeism and tardiness and, over a long time span, reduced turnover (Pierce, Newstrom, Dunham, & Barber, 1989).

In terms of the impact on families, Bohen and Viveros-Long (1981) found that flexitime did not reduce work/family conflict for women with young children, the most highly stressed population in their study. They speculate that the modest flexibility allowed in the programs was simply not enough to make a difference. Reporting a similar finding, Shinn and her colleagues (Shinn, Wong, Simko, & Ortiz-Torres, in press) found that the opening and closing hours of schools and child care programs determined whether or not employees could use flextime.

One of the more promising new efforts to examine leave policies and productivity is a study conducted by the National Council of Jewish Women (1987a) in 80 communities across the country. Nearly two thousand women were interviewed in their last trimester of pregnancy and again four to seven months after giving birth. On the basis of eight indicators of an accommodating workplace (sick leave, disability, wage replacement during disability leave, parental leave, supportive supervisor, health insurance, flexible scheduling, and some form of child care assistance), the researchers found that the women who worked for the most accommodating companies were more satisfied with their jobs, took fewer sick days, were sick less, in fact often worked more on their own time, worked later into their pregnancies and were more likely to return to work.

Managers often say that developing formal and informal work/family supports requires a "leap of faith" that what the company gives, it will get in return. The NCJW study provides the first empirical evidence that this leap of faith may well be justified: when companies are more accommodating, employees are more likely to respond in kind.

4. Obstacles to the Expansion of Flexible Time and Leave Policies

Management Resistance. A major obstacle to the effective implementation of flexible work schedules is the management tenet that presence equals productivity. Managers fear an impeded ability to supervise, lack of communication, and a loss of productivity with employees requesting non-traditional 8 o'clock to 5 o'clock schedules. And in production settings, supervisors foresee an underutilization of equipment.

Those managers who have developed new skills to manage flexible schedules report increases in productivity from employees who are working smarter and harder.

The major objection to governmental parental leave legislation has come from the small business community, spearheaded by the National Chamber of Commerce which asserts that mandating benefits such as parental leave will hurt business and may even force companies to stop hiring women, to close their doors, or to cut back on other benefits. There is little evidence about outlining the cost/benefit to companies in providing leave. Our research team has two studies in process which will hopefully provide data to separate fact from fiction in this debate. One study will examine the cost implications of how leaves are managed; the other will assess the impact of parental leave legislation in four states on employers and employees.

Company or union regulations. Certain company policies inhibit part-time work. For example, when a company budgets whole head counts, a supervisor is allotted a certain number of people. As a part-time employee counts as a full head count, a supervisor is less likely to permit part-time work.

Unions are traditionally concerned with creating new jobs, decreasing regular working hours and gaining overtime pay. Thus they often resist the banking of hours and other flexible time programs that reduce overtime work.

Research on strategies that have overcome some of these obstacles would help both employers and unions.

Governmental regulations. Under federal law, non-exempt American employees must be paid overtime after working 40 hours in a week. A small group (those working on federal construction projects) must, in addition, be paid overtime after working eight hours in a day. State and local laws as well as union regulations are superimposed on the federal laws. The most effective flexitime programs allow the banking of hours (i.e., the employee can work long hours or days and then take time off later). However, maximum hours legislation can hinder their implementation because companies are reluctant to pay the required overtime premiums.

Lack of information. The contention that many jobs cannot be divided into part-time may be untrue. Schering, a chemical company headquartered in Berlin, West Germany, found that 85 percent of jobs in the Quality Control division (a division in which jobs ranged from management to production) could be reorganized into part-time components, a percentage that far exceeded expectations. As a result, the company developed a whole series of ingenious strategies that include the traditional half-day of work but also three people sharing two jobs and arrangements whereby employees work one week and are off the next.

5. Implications for Policy

The implications of the preceding data for public policy recommendations are:

1. Increased information is needed on various models as well as costs and benefits of time and leave policies with an emphasis on greater flexibility.
2. Policies should be developed so that employees do not lose benefit coverage or the option of returning to full-time jobs as their family needs change.
3. Attention must be given to career mobility of employees who take a leave or work shortened hours for a limited period.
4. Company, union, and governmental barriers to increased time and leave flexibility should be studied and recommendations for change developed.

C. The Psychological Aspects of Jobs

1. Dimensions of Jobs That Cause Problems

While issues such as child care, elder care, and job schedules are commonly acknowledged as affecting the worker's ability to combine work and home life, the more psychological aspects of the job are somehow considered out of the purview of the work/family realm. However, our research indicates that this should not be the case. The characteristics and ambience of the jobs can powerfully affect the ease with which dual-earner couples and single parents manage their responsibilities at work and at home.

Job Autonomy. Our research team has found, as have Piotrkowski and Crits-Christoph (1982) that when employees lack a sense of control over the work problems they face, they are likely to have higher levels of stress and to feel their jobs cause more interference with their family life (Galinsky, Love, Bragonier, & Hughes, 1987).

Job Demands. The effects of a demanding and hectic job on an employee's mental and physical health has been well researched. Karasek and his colleagues have found that the interaction of limited decision-making power and arduous job demands was a significant predictor of job dissatisfaction, stress, and poor health such as heart disease among employees (Karasek, 1979; Karasek, Baker, Marxer, Ahlbom, & Theorell, 1981). In the Merck study, we found that employed fathers with demanding jobs were more likely to report higher levels of stress and more conflict in balancing work and family responsibilities (Hughes & Galinsky, 1988).

Supervisory Relationships. Our research indicates that the relationship with the supervisor is one of the most powerful predictors of work/family problems. This relationship has two components: job support and work/family support. Employees who perceived their supervisors as more supportive on the job (i.e., helpful in getting the job done well as well as when work problems arise) reported lower levels of stress and fewer stress-related health problems (Galinsky, et al., 1987).

Supervisory work/family support occurs when supervisors (1) feel that handling family issues, especially as they affect job performance, is a legitimate part of the role, (2) are knowledgeable about company policies that apply to family issues, (3) are flexible when work/family problems arise, and (4) handle employees' work/family problems fairly and without favoritism (Galinsky, 1988b). The National Council of Jewish Women's study (1987b) of women before and after childbirth found that having a supportive supervisor was roughly equivalent to having a supportive spouse in its effect on stress. In the Merck study, male employees with supportive supervisors reported lower levels of stress and fewer stress-related health problems; female employees also reported less stress (Hughes & Galinsky, 1988; Galinsky, 1988b).

Supportive Culture. On the basis of focus groups that our research team has conducted at numerous corporations, the issue of "family-friendly" organizational culture has risen. In a needs assessment at a large telecommunication research lab, we found that of all job conditions assessed (scheduled hours per week, overtime, control over scheduling, commuting time, supervisor support, and supportive culture), culture was the most significant. Having a perceived unaccommodating culture was predictive of stress-related health problems, parents' worrying about their children while at work, and the perception that child care problems impair productivity (Lurie, Galinsky, & Hughes, 1988).

2. Business Initiatives that Address the Psychological Aspects of Jobs

Businesses seldom consider addressing the nature of the job as a work/family issue, despite highly significant research indications that this is indeed the case. One of the few exceptions is Local 8-149 of the Oil, Chemical, and Atomic Workers. Our interviewers asked the union members' children what one change the union could make to promote a better quality of family life. Many of the children requested that their parents come home less "wired"; they said that assembly line tensions caused their parents to come home in bad moods. The union responded by initiating discussions and bringing in trainers to help members reduce the demanding nature of their jobs and to learn conflict resolution skills.

Also relatively rare is supervisor training in work/family issues. In a nationally representative study of working parents (Galinsky & Hughes, 1987), we asked what changes would improve employees' quality of family life while maintaining or increasing their productivity. The most frequent suggestion was for merit raises, but the second was to train supervisors to be more accommodating when family needs arose. A few pioneering companies are beginning to develop work/family modules as a part of supervisory training.

Pioneering companies are also beginning to experiment with making the company culture more "family friendly." To bring about these changes, company mission statements are revised to include the notion of being responsive and responsible to employee's families, and articles are published in company newsletters.

Programs to help employees cope with work/family stress. Employee Assistance Programs (EAP's) originally focused on substance abuse. Today, EAP's (which now number over 5,000) have begun to attend to work and family issues.

Companies are now offering seminars on work and family life. Typical topics in the seminars include "Managing Family Work," "Family Communications," "Returning to Work After Baby," and "Handling Work/Family Stress." Estimates place the number of companies providing seminars at over 1,000, including small and large employers alike (Catalyst, 1983). Companies have also developed or purchased newsletters on work and family life.

Some companies have moved toward a preventive rather than a remedial focus. They have installed wellness programs. One of the most notable is Johnson & Johnson's Live for Life Program which includes all aspects of health promotion.

3. Obstacles to the Expansion of Programs that Help Employees Cope with the Psychological Aspects of Jobs

These obstacles are predominantly attitudinal. If company decision-makers do not see addressing work/family issues as part of their business mandate, they are much less likely to focus on prevention of problems and changing informal policies.

4. Implications for Policy

1. Companies should heed information about work/family conflicts of dual-career and single parents in order to understand the psychological aspects of the job.
2. Evaluation research is needed on more innovative efforts such as supervisory training.

III. POLICY RECOMMENDATIONS TO THE DEPARTMENT OF LABOR

In considering dependent care, time and leave flexibility, and the psychological aspects of the job, certain needs for action have emerged. Overall, the establishment of a stronger research base on the problems that affect dual earner couples and single parent employees and the evaluation of the effectiveness of programs that address these problems is recommended. Efforts should be made to disseminate this information on both a policy and practical "how-to" level. This effort would involve redesigning the Department of Labor's Clearinghouse so that a local, state, and national data base network is developed. In terms of dependent care initiatives, the major responsibility of government is to establish a stronger dependent care system for companies to buy into. Research should be conducted on the barriers to permitting greater time and leave flexibility and task forces should determine how to overcome these barriers. Finally, local public/private partnerships should be established to encourage responsive and creative approaches to local work/family issues.

A. The Need for Additional Research

1. A National Work/Family Database

While there is a great deal of data on the nature of work/family problems in specific workplaces, notably large corporations, there is no source of national data. Thus, information is limited on certain populations such as single parents, minority workers, low-income workers, and employees who care for the elderly. Because some of these population groups are expected to increase, collecting trend data that can identify problems and trace changes over time is of paramount importance in continuing to guide policy.

2. Program Evaluation

Research on work/family solutions is even more scarce than research on work/family problems. Very few evaluation studies have been conducted and only a handful have been methodologically sound (with adequate measures, pre/post tests, and well matched control groups). Several recent grants awarded by the Department of Labor include cost/benefit analyses but these studies are limited by tight time frames and are not collecting original quantitative data. As employers begin to implement programs, it will be very useful to have program evaluations informed by properly designed studies.

3. Policy Studies

Certain business, union and governmental policies discourage work/family initiatives (e.g, "whole headcounts" or regulatory confusion). In future, there should be research on "strategies that work," -- successful corporate and union programs that bypass traditional obstacles. Emphasis should be given to models of greater time flexibility and reduced working hours as well as small business initiatives. Research is also needed on the effectiveness of government incentives for corporate involvement such as business tax credits.

B. The Need for Information Dissemination

Overall examinations of obstacles reveal that lack of information has impeded the adoption of work/family initiatives. Obviously, information can be disseminated but still not be heard. If the issue of work/family seems foreign to senior managers with no first hand experience in such problems, they may not pay attention to such information, no matter how well produced or distributed.

Three trends, however, indicate that resistance to work/family initiatives is decreasing. First, the growing labor shortage should further the notion of employees as human capital rather than as expendable labor. Because of these shortages, recruitment and retention will become more prominent corporate goals. Second, the aging population should mean that increasing numbers of senior managers will have direct experience dealing with elder care issues, whereas they may have been shielded from child care problems. Third, as leading companies continue to develop work/family initiatives, companies lacking them may be at a competitive disadvantage. Ultimately, corporate interest in information on work/family problems should grow.

1. Information Dissemination at a National Level

Under Ann McLaughlin, the former Secretary of Labor, the Women's Bureau has begun to develop a work/family clearinghouse. Its objective is sound: a National Clearinghouse so that business, labor, and government can access work/family data. However, the strategy to achieve a national, computerized data base is, in my view, problematic. In a country as complex as the United States, it is nearly impossible to maintain a national database that is accurate and up-to-date. A more effective strategy would be to refer callers to state or local agencies who are funded to perform this function.

A second problem with a national database is that company representatives rarely call with a simple question. They do not want rote answers from a computer; they want to speak to experts who can help them think about criteria for selecting a consultant, how to frame questions in a needs assessment, and how to overcome management resistance to increased time flexibility. As planned, the clearinghouse informant is not a professional with vast expertise in answering these questions, but someone expected to synthesize data prepared by experts and entered into the computer. This approach is troublesome. A far superior method would be to fund several national, non-profit organizations. Many such organizations already provide information to corporations without funding. Through careful screening, a small cadre of organizations specializing in overall work/family issues or subtopics (e.g., dependent care, time flexibility, and benefits) could be identified, receive referrals from the national clearinghouse and be funded to disseminate information.

Besides referrals, the major purpose of the National Clearinghouse should be to develop materials (The Resource Guide they produced is an example) and to commission data gathering, such as a study of the effectiveness of various incentives in increasing business involvement.

2. Information Dissemination at the State Level

At least ten states have established a state clearinghouse (a "one-stop shop" as they are frequently called) to provide the business community with information. The effectiveness of these dissemination efforts should be analyzed.

To encourage all states to establish a clearinghouse, the Department of Labor should widely publicize the existence of the various state efforts. In collaboration with organizations such as the National Governors Association, a conference or prominent session should be convened for representatives of all 50 states to discuss state clearinghouses and share promising practices. Some interesting state initiatives include:

- New Jersey's strategy of visiting companies that request information as well as following-up on this visit.

- Oregon's system of tracking all work/family initiatives, not merely on- or near-site centers.

- New York State's decision to locate its clearinghouse within the Department of Economic Development.

- Wisconsin's strategy of giving awards to exemplary corporate programs.

3. Information Dissemination at the Local Level

The National Clearinghouse should provide referrals to expert organizations as well as to state clearinghouses and local agencies. A network of local agencies should be encouraged to monitor local work/family initiatives. One obvious choice is Resource and Referral agencies, which already form a national child care network and work with local companies. Obtaining and maintaining such data gathering could be done through cooperative arrangements with organizations like The National Association of Child Care Resource and Referral Agencies.

C. Dependent Care Initiatives

One finding of this review is that companies are more likely to buy into the local child care system when that system is well developed. Thus I conclude, as did the New York State Task Force on Work and Family, that a major role of government is to develop and strengthen the existing dependent care system. The Department of Labor should promote this idea at a national, state, and local level, not only for the sake of the current productivity of our workforce but in order to develop our workforce of the future. The initiatives needed to improve the system should be focused on four areas:

1. Child Care Affordability

- A federal tax credit on earned income to help the neediest families pay for child care.
- The provision of a sliding scale on this credit to help families move out of poverty.

2. Child Care Quality

- Standards that assure children a safe environment. If this is not politically feasible on a federal level at the present time, the federal government should offer strong incentives for states to raise their standards gradually (so that many child care providers will not be forced to go out of business).
- Improvement in state licensing functions so that there is sufficient staff to visit programs and so that personnel have child development backgrounds.

- Pre-service and in-service training for providers supported by increased revenues at a federal, state, and local level.

- A federal initiative requiring each state to form a broad-based task force that includes business leaders to consider ways to improve salaries and benefits for the child care workforce to stem the destructive and costly turnover in the field without making programs unaffordable for parents. The federal government should disseminate information on promising strategies to these task forces.

- Mechanisms at all levels of government to promote collaboration and coordination of all the players in the child care and early education systems. Technical assistance on how to collaborate is also needed.

- The National Clearinghouse and local child care Resource and Referral agencies should widely disseminate information to parents on how to select quality child care.

3. Child Care Availability

- Start-up grants and loans should be provided to child care providers by the state and national government. A business fund could be established to provide additional monies.

- The federal and state governments should study and establish ways to help providers obtain insurance.

- Resource and Referral should be funded on a state and national level. Information should be disseminated about initiatives such as the Maryland partnership between business and government in building a state Resource and Referral system, the California Child Care Initiative, and others.

- Schools and churches should be encouraged to offer space or provide before- and after-school programs.

- Four-year-olds should be offered part-day or full working day developmentally appropriate programs in schools and community-based organizations. This is preferable to short educational programs and wrap-around child care or paying for expensive bus services to take children to distant child care sites.

- A report modeled on Workforce 2000 (Johnston, 1987) should be prepared on the importance of early child care and education to the future workforce. It should be widely disseminated.

4. Elder Care

There has been too little consideration of what the aging population will mean to the labor force. Studies should be undertaken to consider the impact of an aging population on (1) Social Security; (2) corporate benefits; (3) retirement age; and (4) health care cost containment and employee elder care responsibilities. A report modeled on Workforce 2000 should be prepared and widely disseminated to help companies plan for the shifts that will occur.

D. Flexible Time and Leave

- The federal government should study barriers to flexitime at the workplace and make policy recommendations. Studies of the contingent workforce should also be considered.

- A task force of business and union leaders should be convened to consider how to expand flexibility while maintaining worker protections.

- Information on the impact of state parental leave statutes on employees and employers should be made available to the federal government, state governments, and business community to aid in the design of legislation.

- The Department of Labor should encourage states to develop Temporary Disability Insurance.

E. The Psychological Aspects of Jobs

- Information should be disseminated to companies about how the nature of jobs themselves affect workers' ability to manage work/family responsibility.

- Family health care coverage and portable benefits should be considered as a work/family issue. Efforts should be undertaken on to provide families with a minimum of health and benefit coverage.

F. Public/Private Partnerships

One of the most promising developments in the past few years has been the formation of public/private partnerships to address the changing nature of the workforce. A crucial role for the Department of Labor at the present time is to disseminate information on these efforts and perhaps to offer small incentive grants to communities to start such efforts using existing structures. Some examples include:

- Success by Six. This initiative was spearheaded by the United Way in Minneapolis and was chaired by the CEO of Honeywell. Representatives of business, philanthropy and social service identified barriers to children successfully entering school at six, and recommended a comprehensive strategy so all children can be successful by age six. Other cities such as Houston are considering replicating this initiative.

- Children in Need. A project undertaken by the Committee for Economic Development which concluded that the most important investment this country can make for future productivity is the early education and care of at-risk children. Local task groups, such as in New Orleans have conducted a self-study and proposed recommendations.

- Charlotte Champions. A group of corporations in Charlotte, North Carolina, in conjunction with the local child care resource and referral agency, have pledged money to improve local child care.

- One Small Step. San Francisco companies pledge money and act to improve local child care.

IV. CONCLUSION

The changing nature of the family, the labor force, and the economy have transformed the economic and social landscape. The Department of Labor performed an enormous service to American business in bringing these changes to their attention by commissioning and disseminating Workforce 2000 (Johnston, 1987). Among the six changes recommended by that report is assistance in helping families reconcile the conflicting demands of jobs and family life:

> What is needed is a thoroughgoing reform of the institutions and policies that govern the workplace, to insure that women can participate in the economy, and that men and women have the time and resources needed to invest in their children.(p.13)

By following up on that recommendation and assisting business to make that reform, the Department of Labor would help to assure the current and future success of our families and our economy.

REFERENCES

Abt Associates. (1979). Children at the center: Final report of the National Day Care Study. Cambridge, MA: Author.

American Society for Personnel Administration. (1988). Employers and child care: The human resource professional's view. Alexandria, VA: Technical Services Department, American Society for Personnel Administration.

Berrueta-Clement, J.R., Schweinhart, L.J., Barnett, W.S., Epstein, A.S., & Weikart, D.P. (1984). Changed Lives: The effects of the Perry Preschool Program on youths through age nineteen. Monographs of the High/Scope Educational Research Foundation.8.

Bohen, H.H., & Viveros-Long, A. (1981). Balancing jobs and family life: Do flexible work schedules help? Philadelphia, PA: Temple University Press.

Burden, D., & Googins, B. (1986). Boston University balancing job and homelife study. Boston, MA: Boston University School of Social Work.

Burud, S., Aschbacher, P., & McCroskey, J. (1984). Employer-supported child care: Investing in human resources. Boston, MA: Auburn House.

Catalyst. (1983). Work and family seminars. New York, NY: Author.

Christensen, K. (in preparation). [Report on flexible staffing and scheduling.] New York, NY: The Conference Board.

Creedon, M.A. (Ed.) (1987). Issues for an aging America: Employees and eldercare - A briefing book. Bridgeport, CT: University of Bridgeport, Center for the Study of Aging.

Duncan, G., & Rodgers, W. (1987, November). Lone parent families and their economic problems: Transitory or persistent? Paper prepared for Lone Parents: The Economic Challenge of Changing Family Structures, conference sponsored by the Organisation for Economic Co-operation and Development, December 15-17, 1987, Paris.

Emlen, A. (1987, August). Panel on child care, work and family. Paper presented at the Annual Convention of the American Psychological Association, New York, NY.

Emlen, A., & Koren, P. (1984). Hard to find and difficult to manage: The effects of child care on the workplace. Portland, OR: Portland State University, Regional Research Institute for Human Services.

Fernandez, J. (1986). Child care and corporate productivity: Resolving family/work conflicts. Lexington, MA: Lexington Books, D.C. Heath Co.

Finkelstein, N. W. (1982). Aggression: Is it stimulated by day care? Young Children, 37(6), 3-9.

Friedman, D.E. (in preparation). Work and family issues and productivity. New York, NY: The Conference Board.

Friedman, D. E. (1983). Encouraging employer support to working parents. New York, NY: Carnegie Corporation of New York.

Friedman, D.E. (Ed.) (1987). Issues for an aging America: Elder care. New York, NY: The Conference Board.

Friedman, D. E. (1988). [Estimates from the Conference Board and other national monitors of employer-supported child care]. Unpublished memo. New York, NY: The Conference Board.

Galinsky, E. (1986). "Family life and corporate policies." In M. Yogman & T. B. Brazelton (Eds.), In support of families, (pp. 109-145). Boston, MA: Harvard University Press.

Galinsky, E. (1988a). Child Care and Productivity. Paper prepared for the Child Care Action Campaign conference, Child Care: The Bottom Line, New York, NY.

Galinsky, E. (1988b). The impact of supervisors' attitudes and company culture on work/family adjustment. Paper presented at the Annual Convention of the American Psychological Association, Atlanta, GA.

Galinsky, E. (1988c). Business competitive policies and family life: The promise and potential pitfalls of emerging trends. Paper presented at the Women and Labor conference sponsored by the Labor Education Center, Institute of Management and Labor Relations, Rutgers University, October 22, New Brunswick, NJ.

Galinsky, E., & David, J. (1988). The preschool years. New York, NY: Times Books/Random House.

Galinsky, E., & Friedman, D. E. (1986). Investing in quality child care: A report for AT&T. Basking Ridge, NJ: AT&T.

Galinsky, E., & Friedman, D.E. (in preparation). The corporate reference guide to work/family programs.

Galinsky, E., & Hughes, D. (1985). [Merck study]. Unpublished raw data.

Galinsky, E., & Hughes, D. (1987, August). The Fortune Magazine child care study. Paper presented at the Annual Convention of the American Psychological Association, New York, NY.

Galinsky, E., Hughes, D., & David, J. (in press). Trends in corporate family-responsive policies. Marriage and Family Review.

Galinsky, E., Love, M., Bragonier, P. H., & Hughes, D. (1987). The Family Study. Foundation report. New York, NY: Bank Street College of Education.

Galinsky, E., & Shinn, M. (in preparation). The parent/teacher study.

Galinsky, E., & Staines, G.L. (1989). [Prevalence of elder care responsibilities among corporate employees]. Unpublished raw data.

Glick, P.C., & Lin, S.L. (1986b). Recent changes in divorce and remarriage. Journal of Marriage and the Family, 48, 737-747.

Hedges, J.N. (1977, October). Absence from work: Measuring the hours lost. Monthly Labor Review, pp. 16-23.

Hofferth, S.L. (1988). Child care in the United States. In American Families in Tomorrow's Economy. Hearing before the Select Committee on Children, Youth, and Families, July 1, 1987 (p. 181). Washington, DC: U.S. Government Printing Office.

Hofferth, S.L., & Phillips, D.A. (1987). Child care in the United States, 1970-1995. Journal of Marriage and the Family, 49, 559-571.

Howes, C. (1988, April). Can the age of entry and the quality of infant child care predict behaviors in kindergarten? Paper presented at the International Conference on Infant Studies, Washington, DC.

Hughes, D. (1987, August). Child care and working parents. Paper presented at the Annual Convention of the American Psychological Association, New York, NY.

Hughes, D., & Galinsky, E. (1987). Relationship between job characteristics, work/family interference, and marital adjustment. Unpublished paper, Bank Street College of Education, New York, NY.

Hughes, D., & Galinsky, E. (1988). Balancing work and family life: Research and corporate application. In A.E. Gottfried & A.W. Gottfried (Eds.), Maternal employment and children's development: Longitudinal research, (pp. 233-268). New York, NY: Plenum Press.

Johnston, W. B. (1987). Workforce 2000: Work and workers for the 21st century [Executive summary]. Indianapolis, IN: Hudson Institute.

Kahn, A.J., & Kamerman, S.B. (1987). Child care: Facing the hard choices. Dover, MA: Auburn House.

Kamerman, S.B., Kahn, A.J., & Kingston, P.W. (1983). Maternity policies aand working women. New York, NY: Columbia University Press.

Karasek, R.A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. Administrative Science Quarterly,24, 285-308.

Karasek, R.A., Baker, R., Marxer, F., Ahlbom, A., & Theorell, T. (1981). Job decision latitude, job demands, and cardiovascular disease: A prospective study of Swedish men.

Lurie, R., Galinsky, E., & Hughes, D. (1988). [Resources for Child Care Management (RCCM) - Bank Street College of Education needs assessments]. Unpublished raw data.

Lurie, R., Galinsky, E., & Staines, G. (1988). [Resources for Child Care Management (RCCM) - Bank Street College of Education needs assessments]. Unpublished raw data.

Lurie, R., Galinsky, E., & Staines, G. (1989). [Resources for Child Care Management (RCCM) - Bank Street College of Education needs assessments]. Unpublished raw data.

Magid, R. Y. (1983). Child care initiatives for working parents: Why employers get involved. New York, NY: American Management Association.

Marquart, J.M. (1988, January). A pattern matching approach to link program theory and evaluation data: The case of employer-supported child care. Dissertation submitted in partial fulfillment of the requirements for Doctorate degree in Philosophy, Cornell University, Ithaca, NY.

Mason, T., & Espinoza, R. (1983). Working parents project. [Executive summary of the final report]. (Contract No. 4000-80-0107). Washington, DC: National Institute of Education.

Mothers with babies and jobs. (1988, June 19). [Editorial]. New York Times.

National Center for Clinical Infant Programs. (1987, November 25). *When parents have choices* [Press release]. Washington, DC: Author.

National Council of Jewish Women. (1987a). *Accomodating pregnancy in the workplace*. NCJW Center for the Child Report. New York, NY: Author.

National Council of Jewish Women (1987b). *Mothers in the workplace* [Selected findings]. NCJW Center for the Child Report. New York, NY: Author.

Neal, M.B., Chapman, N.J., & Ingersoll-Dayton, B. (1988). *Eldercare, employees, and the workplace: Findings from a survey of employees.* Portland, OR: Portland State University, Regional Research Institute for Human Services with the Institute on Aging.

Perry, K. (1982). *Employers and child care: Establishing services through the workplace.* Washington, DC: Women's Bureau, U.S. Department of Labor.

Phillips, J.D. (1989. February). *Employee turnover and the bottom line.* [Working paper]. Rahway, NJ: Merck & Co.

Pierce, J.L., Newstrom, J., Dunham, R.B., & Barber, A.E. (1989). *Alternative work schedules.* Boston, MA: Allyn Bacon, Inc.

Piotrkowski, C.S., & Crits-Christoph, P. (1982). Women's jobs and family adjustment. In J. Aldous (Ed.), *Two paychecks: Life in dual-earner families.* (pp. 105-127). Beverly Hills, CA: Sage Publications.

Pleck, J. (1986, April). *How work and family issues involve men.* Paper prepared for conference on Work and Family: Seeking a New Balance.

Pleck, J., Staines, G., & Lang, L. (1980). Conflicts between work and family life. *Monthly Labor Review, 103* (3), 29-32.

Regional Research Institute for Human Services. (1987). Dependent care survey: Employee profiles. Portland, OR: Portland State University.

Rodgers, F. (1988). Presentation to the Arden House Conference sponsored by The Conference Board. Unpublished manuscript.

Select Committee on Children, Youth & Families. (1984, September). Families and child care: Improving the options. Washington, DC: U.S. Government Printing Office.

Shinn, M., Ortiz-Torres, B., Morris, A., Simko, P., & Wong, N. (1987, August). Child care patterns, stress, and job behaviors among working parents. Paper presented at the Annual Convention of the American Psychological Association, New York, NY.

Shinn, M., Wong, N., Simko, P., & Ortiz-Torres, B. (in press). Promoting the well-being of working parents: Coping, social support, and flexible job schedules. American Journal of Community Psychology.

Staines, G.L., & Pleck, J.H. (1983). The impact of work schedules on the family. Ann Arbor, MI: The University of Michigan, Institute for Social Research.

Stewart, R.B., Van Tuyl, S.S., Mobley, L.A., Salvador, M.A., & Walls, D.S. (1986, April). The transition at the birth of a second child: Sources of parental stress and support. Paper presented to the Conference on Human Development, Nashville, TN.

Travelers Companies. (1985). The Travelers employee caregiver survey. Hartford, CT: Author.

U.S. Department of Labor. (1988a). Child care: A workforce issue. Secretary's task force on child care. Washington, DC: Author.

U.S. Department of Labor. (1988b). Occupational projections and training data. Unpublished tabulations.

U.S. Department of Labor, Bureau of Labor Statistics. (1988a). Current population survey, 1987 annual averages. Unpublished tabulations.

U.S. Department of Labor, Bureau of Labor Statistics. (1988b). Labor force statistics derived from current population survey, 1948-1987, Bulletin no. 2307. Washington, DC: U.S. Government Printing Office.

U.S. Department of Labor, Bureau of Labor Statistics. (1989). Unpublished tabulations.

Vandell, D.L., & Powers, C.P. (1983). Day care quality and children's free play activities. American Journal of Orthopsychiatry, 53, 493-500.

25. CULTURAL ISSUES AFFECTING LABOR FORCE PARTICIPATION

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25. CULTURAL ISSUES AFFECTING LABOR FORCE PARTICIPATION

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One of the major challenges facing our society in the twentieth century will be how to bring the massive groups of underemployed and unemployed minorities into the mainstream of the labor market. They will soon comprise a significant number of younger workers, 22 percent of the labor market. They will be asked to take over positions requiring increased skill levels, yet for generations they have been hindered in acquiring necessary skills.

Racism and discrimination have taken their tolls on the population in general. On both sides, centuries of myths and generalizations have interfered with the true integration of individuals into the labor market. The policy recommendations presented here grow out of a review of these barriers to employment faced by ethnic minority groups, particularly families in poverty and young adults.

Workforce 2000, recently published by the Department of Labor (1987), describes several trends in the workplace that will influence the future working population:

1. Jobs will demand much higher skills than the jobs of today. Very few will be held by people who cannot read or use mathematics.
2. Service industries will create the new jobs and most of the wealth, rather than manufacturing jobs as in the past.
3. The workforce will be older. The median age will be 39 years in 2000, compared to 36 today.

4. A greater proportion of women will be employed. They will constitute 47 percent of the work force, and 80 percent of women between the ages of 25 and 54 will be working.

5. The U.S. workforce will grow slowly during the remainder of this century.

We need to examine the impact of each of these trends on members of currently disadvantaged ethnic minority groups.

Discrimination

The median income of American families in 1987 was $32,274, an increase of 1 percent over 1986 income, making it the highest in history. However, people of color averaged far less--the median income was $20,306 for Hispanics and $18,098 for African Americans (Census Bureau, 1988). The government set the poverty line in 1987 at an annual income of $11,611 or less for an urban family of four. The percentage of White Americans who earned less than the poverty level fell to 10.5 percent, while more than 33 percent of African Americans met the poverty criterion (Census Bureau, 1988).

These statistics tend to support the view of many Americans that minorities form a monolithic mass. In fact, American society has always included a wide variety of races and ethnic groups, existing at different points on the economic and social scales. Minority families can be found in all social classes, lifestyles, religious groups, and geographic areas, the same as families from dominant groups. Although a large proportion of persons of color have been very poor, a sizable number are working class families, and a solid group is comfortable and achieving (Frazier, 1968; McAdoo, 1988; Willie, 1988).

The real problem behind the differences in median income is that individuals who work are paid at differential rates, based more on group membership than on education and experience. And women of all races are paid lower wages than white males doing the same type of work (U.S. Bureau of Labor Statistics, 1979; Williams, 1988).

By the year 2000, these disparities will be even greater. African American, Native American, and Hispanic men and women now hold mainly unskilled jobs. Jobs requiring the least amount of education and training are projected to decline. High-skill jobs are projected to grow very fast. Minorities will be forced to increase their marketable skills in order to improve their labor market situations. Unless drastic policy changes are made throughout the country, we may see the writing off of a large part of these population groups in the American labor market.

Many diverse concepts have been put forward to explain the lack of economic progress for Hispanics, Native Americans, and African Americans. One explanation that has gained wide acceptance is that poor, but particularly black, families have increasingly become bifurcated into two groups, the underclass and the middle class (Wilson, 1988). This explanation is appealing because it provides ready answers to a difficult situation. This attempt by sociologists, psychologists, and the media to present the situation in a new light conveniently masks the fact that poverty is an age-old phenomenon.

Poverty is evident among both rural and urban citizens in increasing numbers. Nonmetro poverty rates were higher than poverty rates in U.S. central cities. Poverty for youth and children increased twice as fast in nonmetro areas as it did in metro areas (Select Committee on Children, Youth, and Families, 1989). The net rural outmigration, the loss of jobs, and the decline of the family farms have resulted in more young people who need the skills that could come from job training.

This oversimplifies the real economic differences and does not reflect the social isolation and the lack of jobs in the large northern urban centers and southern and midwestern rural locations. It does not explain the perpetual poverty that has existed for generations all around the country (Farley and Allen, 1987).

Only in moving toward a society in which descent is irrelevant will we begin to eliminate job inequities. Discrimination and economic isolation are common experiences for all people of color. Joseph Califano, former Secretary of Health, Education, and Welfare, stated, "Racism haunts the American attic like a malevolent specter, denying peace to any who would live in the house." In recalling his years as Secretary, he noted that "our vigorous enforcement of civil rights laws on behalf of women, Hispanics, and the handicapped met with relatively modest resistance." However, he went on to say that "similar action on behalf of blacks often sparked fierce opposition" (Califano, 1989).

Occupational Levels for Minorities

Ethnic minority men and women now hold jobs that are proportionally different from those held by the total population. Table 1 shows the ratio of each ethnic group of color to the white population for each occupational level, for each gender. People of all races have been limited to occupations that are below their skill levels (Children's Defense Fund, 1986).

Table 1. Occupational Distribution Ratio of Groups of Color to White Population

	Groups of Color							
Occupation:	African American		Asian American		Native American		Hispanic American	
Sex:	F	M	F	M	F	M	F	M
Employed	1.07	1.08	1.39	1.90	1.82*	2.95	--	--
White Collar	1.59	1.39	.96	1.03	2.04	1.50	--	4.70
Blue Collar	.85	.77	1.42	.88	.77	.68	--	1.54
Farm	1.08	1.56	1.03	1.20	.66	.78	--	--
Service	.49	.56	1.03	.35	.57	.57	--	.13

Source: U.S. Department of Commerce: A Statistical Analysis. Women in the United States. Series PP-23, No. 100. Washington, D.C. 1987.

*For example, 82 percent more white women are working than Native American women, and almost three times as many Native American men are not working, when compared to white men. There were 39 percent more white women working than Asian American women. On the other hand, 59 percent more white females are in white collar occupations than African

American females, while 42 percent of Asian women are in blue collar occupations compared to white.

This table clearly illustrates the racial and ethnic differences that exist in the proportions of people who work full time and the types of jobs they hold. If we are to prepare the next generation of workers to enter into markets that are designed to be highly skilled, we will need to make certain policy recommendations that will open up these markets to persons regardless of race, ethnicity, and gender.

Gender differences are found in the distributions of occupations within the primary and the secondary sector. These differences vary across the labor market segments. Lorence (1987) used several log-linear models and found that broad occupational category, gender, and labor market differences do exist. Professional occupations make up 89 percent of the detailed occupations for males, but only 57 percent of the occupations in the female upper-tier, primary market. These differences are found in the lack of integration of women into the full range of military roles and ranks (DeFleur, 1985). But differences are also found in traditional occupations such as nursing, teaching, and clerical jobs. It appears that separate and distinct occupational labor markets exist for women and for men. These disparities are carried over in both the treatment and attitudes of men and women workers. We do not have a single labor market as had been previously hypothesized.

These differences are the basis of the continuing poverty of different groups within our society. It marks one of the most persistent problems that people in these groups must face. This problem can only be overcome by moving toward the elimination of occupational differences that exist between groups. Women and minorities must have equal opportunity for jobs in order for earnings inequities to narrow. It is a problem that did not occur overnight, and it is expected that it will not be eliminated overnight. The need is evident to move in the direction of equity, regardless of race, gender, or ethnicity. Youth must be prepared to take advantage of the increasing job opportunities expected to be available in the high-skill job categories.

Efforts to Overcome Poverty

Isabel Sawhill (1988) of the Urban Institute reviewed economic and sociological studies and concluded that the failings in the American economy can be found in the persistence of poverty. The War on Poverty has been stigmatized for not having changed the situation for women and children. Sawhill indicated that the large sums that were spent on the War on Poverty did not go directly to the targets. They went instead to middle class purveyors involved in these programs. In fact, only 50 cents or less on the dollar ever made it to women and children.

Sawhill estimated the percentage of poverty that occurred from several sources. Demographic changes, for example more single mothers, increased poverty by 1.3 percent, while unemployment increased it by 2.4 percent. The continuing trend of more women assuming parenthood alone, in contrast to having a husband to provide support while the mother takes care of the children, is a major asset.

Sawhill stated that the increases that were due to demographic changes were offset by reductions in poverty that came from many sources. There was a reduction of 3.3 percentage points that came from the growth of cash benefits programs. Targeted education and human capital programs caused 0.4 percent; and 0.1 percent reduction in poverty came from the overall growth of the economy. The overall net reduction in the national poverty rate was 0.2 percentage points. In other words, we have yet to factor out the real causes of poverty, particularly among families of color.

Sawhill states that the greatest impact of persistent poverty has been the slow overall growth of productivity and wages in the economy during the past two decades. Also indicted is the growing gap in earnings between the more affluent and those who are poor. Added to all of these is the high level of unemployment, which has its greatest impact on people with fewer skills and less education. The only exception she found was Social Security, which has cut sharply into the poverty rate of the elderly. Some human capital programs such as Head Start, the Job Corp, and some education and training programs have had some impact on reducing poverty. But they are not great panaceas because the levels of spending have not been high enough. These programs produce only 5 to 25 cents of antipoverty impact for every dollar spent.

The changes with the strongest impact on poverty were those related to families and unemployment rates. The unemployment rates in the early 1980s were very high compared with the low rates of the late 1960s, a time of relative prosperity, making it difficult for many workers to find jobs.

Ethnic Minority Youth

The major concern in the coming years relates to the young men and women who have given up hope and who drop out of school. In many ways, they have become a 'throwaway' generation. In the past decades, U.S. society has been able to discard them, but no longer can it do this. All sections of the population will need to be gainfully employed. Approaches are now needed to readdress the job related concerns. Approaches are now needed to readdress the concerns of African American, Hispanic, and Native American youth.

One important approach is to examine the hypotheses put forward about these groups. Are they accurate or do they have built-in biases? Will they help lead to effective policies or will they perpetuate inequities? Are there areas of knowledge from these diverse cultures that could be incorporated into new policies? These questions must be asked and answered before effective policies can be formulated.

Knowledge of the strengths of minority groups can be helpful in working with their young people. It is important to be aware of aspects of their heritage that have been helpful in the past, as members of groups have coped with adversity and difficulties related to employment and achievement. Many of these attributes have become known as strengths. They are areas that could be reinforced as programs are designed to help youth develop the skills that are needed in the marketplace. Some of these patterns are common to all subcultures (McAdoo, 1978, 1987):

- Group members are involved with and have frequent interactions in close kin-help patterns.

- Extended family arrangements are common. They often include friends who become as kin--often as fictive kin, in which nonrelatives assume the responsibilities of kin.
- Poverty is widespread because of isolation from economic and social support of the broader community.
- Problems often occur when the child leaves the family and ventures forth into conflicting values.
- The wider society views them in a stereotypical manner. This view does not allow differences in behavior.
- Ethnic groups suffer a lack of respect for their cultural uniqueness.

These patterns hold true for Hispanics, Asian Americans, African Americans, and Native Americans, as well as for other immigrant groups. A reaffirmation of pride in their ancestral group has become universal, as they attempt to build cultural and emotional barriers against the perceptions and actions of the dominant culture. We need to assist them and not detract from these movements. Rather than look upon the movements with a fear of members of minority groups becoming more separate, individuals need to understand that the emphasis is an effective coping strategy against stress. We need to emphasize the value of diversity (McAdoo, 1969), rather than stress the lack of diversity as being a sign of acceptance.

Selective Education and Training for the Disadvantaged

One common element is the great faith that ethnic minorities have in education. This may appear paradoxical when one looks at the lack of educational advancement for which these groups are known. Minority family members have to accept the fact that support for their aspirations for higher achievement is seldom found in the public schools. It is impossible to obtain an education and worker's skills in a school where many of the teachers are themselves untrained, where self-esteem is not enhanced, and where upward mobility is devalued. It is also difficult to work with children when parents have given up hope, when they are dependent upon drugs and alcohol.

There is one approach that would reinforce the patterns of many of the target groups. It could be referred to as "saturation selection and training." Such an approach is often extremely effective with disadvantaged youths and their families. This method is related to the social interaction, extended family helping arrangements, and economic isolation from the wider community of the labor market. Saturation training is an approach that would select clusters of persons to whom training will be given. Emphasis will be less on the individual and more on the social aspects of the experience. Under this approach more than one individual in a community will be selected to receive intensive training and job skills. An individual may be able to gather all of the education and skills that are needed, but they are often then left in isolation. When the individual returns to the community of origin, one that is part of his culture, this person may not have contact with persons who have also changed and grown. The group support and encouragement that are needed to sustain the changes in the individuals will be missing.

The individual will not be sent alone to a job training site, such as is now done with the Job Corps. Clusters of persons from a community will be targeted as they are selected to be trained. Clusters may be members of a graduating high school class; youth members of a cluster of churches; or all of the youth who live in a ten block area or census tract of the city. The social aspects of remaining in a group could help avoid the high drop out rate. They will be able to reinforce each other and they could pass knowledge on to each other. They will then be available to each other when they return home. The group element may offer encouragement that will be necessary to increase the labor market motivation and participation of disadvantaged youth.

The use of clusters will place the emphasis on small groups, instead of the emphasis being placed on individuals. It would be consistent with the cultural components of Native American, African American, recent Asian and South American immigrant youth. This approach has begun to show prospects in the collective use of scholarship aid and counseling to provide college education for a class within a particular school (Disenhouse, 1989; Fiske, 1989).

Mentoring is an element that is now occurring and is consistent with earlier cultural patterns (Mangan, 1989). The use of alliances between schools and the home, and between training programs is a growing effort that is beginning to show results (Daniels, 1989). Internship programs will allow the youth to work alongside skilled individuals. This will allow them to reinforce the skills that they have been taught.

The use of the culture of the youth in many ways will reinforce elements that will be supportive of greater retention of skills and education.

Family Members as Role Models for Children and Youth

Children need role models of parents who work every day if they are going to want to be successful themselves. It is important that efforts be made to increase the involvement of parents and extended family members, along with the child, in order to increase the achievements of the present generation of school children. Programs will need to be designed to increase cross-age education in order to get to the child and remove the family from welfare dependency. A program with a good orientation, the Kenan Trust Family Literacy Project, was started by Sharon Darling in Kentucky (Fiske, 1989). Both mothers and their children go to school--the mothers to become literate and to finish high school, the children to attend their regular classes. This gives the children a different and important view of the importance of education. They receive this message when there is still a chance to succeed.

The focus should be on both parents and not on just the mothers. Males have traditionally been left out of such programs. The child needs to have both parents in the programs. Young men are given opportunities to become involved with their children. They should be given opportunities to interact and parent their children on a frequent basis. They should be given help with basic literacy and be helped to receive training for future jobs. If these things are done, we should see a decrease in out of wedlock pregnancies and possibly an increase in marriages, as these fathers become productive citizens.

Children start school at approximately the same level, according to standardized achievement tests, but quickly began to diverge into class- and gender-appropriate groups. Alexander and Entwisle (1988) have demonstrated this through their extensive longitudinal study of children in schools in Baltimore. They included children in all black, all white, and integrated schools; they included children from middle class, working class, and poverty classes of both races. By the end of the second grade period of standardized testing, a marked difference was found, both by race and by gender. Middle class whites had begun to move up, and girls had begun to diverge in mathematics. While they were originally equal in achievement, the expectations of class and gender began to become evident.

In order to move minority children up in grade school and later, it will be necessary to have well-funded preschool programs that involve the children and their caretakers, regardless of who these persons may be. These programs will have to begin with the mother's pregnancy, for much damage can be done before the child can be caught in a Headstart program. Headstart programs need to be extended to all who are eligible. Its programs of education, medical care, good nutrition, and mobility ladders for the mothers are very much needed if we are to encourage success in the lives of these families.

There is a real need for parents to become more involved in promoting the achievement of youth. The involvement of parents will offset the lower expectations that are held about minority children. Parents and individuals of middle class status, who have been able to achieve, should demand higher standards within our schools. They will have an impact on achievement of youth that may be greater than increases in Federal spending (Johnson, 1989).

Cultural Issues Related to Women and Work

Other papers have been commissioned that will address the issues of women and the policy recommendations that are needed to overcome many of the problems that we face in the future in relation to women and families and work. It may be assumed that the recommendations that are made for women will also apply to the minority women. In fact, because of the one-half of minority families who have only a mother who can bring earnings into the home, those recommendations are even more important to the women of color within our society.

Occupational segregation of men and women declined as the result of the entry of more women into traditional male occupations (Brown and Pechman, 1987). However, occupational segregation is still very high. Women and men have different labor market experiences and the internal labor market structures differ for women (Hartmann, 1987). More women work part time because of domestic responsibility. Gender differences are therefore still an important part of the workplace.

We must be aware of the differences in the experiences of women that are caused by the interaction of gender, race, and ethnicity. Demographic differences should be placed in a context of race differences (Farley and Allen, 1988).

Families are constantly changing. In the past, many men were able to make a decent "family wage" by themselves. This traditional family wage allowed many women to remain at home and concentrate their efforts on the family. References are often made to these times as a period when women concentrated on hearth and home. We must not forget that conditions then were such that someone was required to remain at home to attend to the preparation of food and housekeeping. With the invention of laborsaving devices and faster food processes, women were no longer tied to the household.

This not an accurate presentation of the actual experiences of many women. While many women are just entering the labor market, others have always worked part time. Or they have combined family obligations along with work in family-oriented enterprises, on family owned farms and in stores. In these environments women were able to work and still parent their children. Many black women have always been in the labor market. They did not have an extended period of domesticity. Now women of all races have continued to enter the labor market in growing numbers. The economics of the present period now require that every person's wages are needed by the family.

The Issues Related to Single Mothers

There have been major changes that have occurred in the marital status of minorities (McAdoo, 1987). These changes have contributed to the growing diversification that has occurred as the middle class has become more secure and the working and lower classes have become more insecure and impoverished. But the major increase has been in the number of children who are living with only their mothers (see Table 2). Fewer married couples are maintaining that status throughout the early lives of their children. This higher level of black single mothers, when compared with the higher rate of white and Hispanic rates of married couples with the spouse present, means that fewer resources are available for the family.

There has been a continuing debate within the black community about whether or not there is an imbalance in the male-female ratio. There are more females; men are heavily involved with the criminal justice system, and drug dependency takes its toll. It is more difficult for females to become married.

Table 2. Marital Status of American Women Over Age 15
By Race in 1987
(in percentages)

Marital Status	Race of Women		
	White	Black	Hispanic
Single, never married	20.9	36.4	26.6
Married, spouse present	56.4	32.4	50.6
Previously married:	22.7	31.3	22.8
Married, separated	2.7	8.9	7.6
Divorced	11.8	10.8	6.8
Widowed	8.2	11.6	8.4
	22.7	31.3	22.8
	100.0	100.0	100.0

Source: Bureau of Census, unpublished data; American Woman Today 1988-89, A Status Report.

The increase in single mothers is an issue that is having a great economic impact on the entire society. The reason is being debated by demographers, sociologists, and psychologists all over the country. There is no consensus as yet, but the debates have settled down to two reasons: (1) the availability of welfare; and (2) the limited economic opportunities of Black and Hispanic males that prevent marriage, even when there is a pregnancy imminent. While the former is appealing as an explanation, studies have shown that the presence of welfare only contributes about 10-14 percent of the existence and growth of single parents and poverty (Sawhill, 1988). The second reason is probably the more accurate and descriptive of the events that are occurring in urban and rural communities.

Table 3. Levels of Single Parents, 1960, 1980, 1988

(in percentages)

Levels	1960	1980	1988
White	7%	15%	19%
Black	22	46	54
Hispanic	NA	21	30

Status type	Divorced	Never Married
White	50%	50%
Black	46	54
Hispanic	67	33

Source: Bureau of Census, unpublished data. Quoted by Spencer Rich. Washington Post February 16, 1989, A7.

Single mothers are a combination of women who are single and never married, previously married but now separated, and widowed women. Divorce is a major problem for blacks and whites, but not for Hispanics. More females (31.3 percent) than males (16.9 percent) were previously married, but now single. They are now single as the result of marriage breakup or death.

The majority of single mothers have been previously married and are not single mothers due to adolescent pregnancy (see Table 3). Half of all single mothers have been married and half have not been married (Glick, 1988). Adolescent pregnancy is now declining among blacks and increasing among whites (Edelman, 1987). However early pregnancies are a continuing problem in all communities, but especially those of color. The future of these families, and of these children, will rely on jobs being made available to single mothers who are increasingly carrying more of the burden of young children.

Single status is a real economic burden for these women. Men tend to remarry within two years and women average a thirteen year wait (McAdoo, 1987). This period of time is important, for women are economically vulnerable when they parent alone. When a woman decides to parent alone, she then faces many financial hurdles.

The other source of single mothers is adolescent pregnancy. The level of adolescent pregnancy among blacks has declined over the past few years, while the level among whites has continued to increase (Edelman, 1987; McAdoo, 1987). What causes this proportionately higher level of adolescent pregnancy in African Americans? There are many reasons for premarital pregnancy: ignorance of contraceptive approaches, sexual manipulation of young girls, and unplanned accidents. The element of planned pregnancy is true for some because the teen needs someone to love (Dash, 1989).

The incomes of black women have been presented as higher in relation to black men (73 percent of black male earnings) than the incomes of white women in relation to white men (55 percent). Yet black women are the lowest paid of these groups, for they earn only 93 percent of the pay that white women earn. One must be careful in comparing blacks to blacks when looking at overall family levels. The white male average is the national criterion against which family income levels should be judged. Black women's earnings average 51 percent of white males' earnings; white women average 55 percent, and black men earn 71 percent of that earned by white males (National Committee On Pay Equity, 1987).

Decreasing Too Early Pregnancy

Prenatal care should be made available through the use of home visits by nurses to low income areas. This would start as soon as the woman finds out that she is pregnant. The mother would be taught the basics of child rearing and care for herself. A similar program was started by David Olds in Elmira, NY. Over nine years they found, using a sample of 350 women, that there was less child abuse, healthier babies, and the mother had better employment and educational achievements (Rich, 1989).

As the mother's education increases, especially if the mother finishes high school, the likelihood of marriage is increased (Testa, 1989). Yet the interaction is not taken into consideration by those who are designing programs of prevention and help. Programs rarely involve the fathers, but concentrate only on the mothers.

One of the best means of avoiding too early pregnancy is to increase the perception that educational and occupational achievement is possible. This means that changes are necessary at the early school grades to enable the girls to feel that there are opportunities for them beyond maternity. For when girls feel that they have a possibility of having an alternative future, then they will tend to be better contraceptors.

Cultural Issues Related to Young Men

Women cannot be viewed out of context with the interactions that they have with men, particularly young men. Early parenting outside of marriage is the result of an interaction between the stressful situations of both young men and young women. The increase has been related to the increasing levels of unemployed and underemployed young men in the communities. When pregnancies outside of marriage do occur, young men without jobs tend not to get married, as they did in earlier times (McAdoo, 1987).

There is a growing decline of black males in the educational system, and in life expectancy (Nickens, 1989). Their enrollment in college fell from 4.3 percent to 3.5 percent in the period between 1976 and 1986. In the same period, black women maintained their proportion of college enrollment of 5 percent (Wilson, R., 1989a). This is one more imbalance that will make it more difficult for marriages to occur and to have two parents, with steady incomes, to bring up the next generation of children.

The one issue that has the potential to have devastating impact on African American families is the volatility of the situations of young males. Poor males are increasingly involved in self defeating, violent, and drug-related activity. They are not equipped to take advantage of the new jobs that will be opening up. When boys have alternatives and perceive that there is a future for them, then they are less likely to turn to life options that are destructive and illegal. When there are other means for approaching adulthood, then making babies will not be the only means of establishing manhood.

Inner city youth must be able to develop entrepreneurial skills. They must be assisted in learning the mind set that will enable them to be able to use and develop expertise in ways of making money that are legal. They need to develop a "marketplace mentality" that is not often taught in the home. Schools could help teach these skills. This is one area where community persons can come in and provide leadership. Mentoring programs are particularly capable of applying marketplace skills and technology that could be taught in the schools. Applied technology could be reinforced as part of the community cultural environment.

Youth will need to be able to obtain job training that is realistic. They will need to be literate and have the basic skills that will allow them to enter the labor market of the 20th century.

Recommendations

I. Families in Poverty

A. Federal And State Governments

1. In order the make positions attractive and to reward persons for their work regardless of gender, race, or ethnicity, efforts must be made to erase inequities in wages. Jobs must pay for the work that is completed and not the person who is doing the work.

2. We will need to move toward the erasure of occupational discrimination. By being aware of the inequities and dislocations that exist in the occupational categories, we then can move on to make specific guidelines on employment and retention.

3. There should be full enforcement of the Civil Rights Act and the EEO laws. Specific jobs need to be monitored in order to ensure that there is adherence to all of the tenets of civil rights in job hiring and retention.

4. Tax benefits can be offered to companies that hire and advance members of minority groups and women into occupations in which they are underrepresented.

5. The federal and state governments should begin by first hiring all employees regardless of race and gender in order to promote equity.

6. There should be continued enforcement of the child support laws, through the use of income tax returns and attachment of wages. A nation-wide level should be established, based on the number and ages of the children.

7. Uniform support payments should be made by fathers to mothers. They will be used to augment welfare payments and should be made available to mothers who are not on welfare. The payments should be made regardless of the mother's employment level.

B. Private Industry

1. Efforts must be made to reach out to parents and youth in clusters in communities to involve them in obtaining the job skills that are needed. Groups of youth can be given training, rather than individuals, that will reinforce the retention of skills.

2. Employees should be reminded that fair employment is the law.

3. Consultants can be hired to help firms understand and implement EEO laws. This will allow a financial opportunity in addition

to making the correct actions. Segregation that exists would be eliminated in apprentice programs that are run by certain unions.

4. Contractors should be eligible to offset the wages that are paid to hire single mothers, AFDC recipients, and women who are in training for the new skills that will be opening.

C. Public Schools

1. Students should be integrated on all courses, in order to help eliminate the bias that have traditionally been in place for the segregation of the sexes. For example, girls should be allowed and encouraged to take the technical courses that will prepare them for the new jobs that will be emerging. Boys should be encouraged to take home economics courses so that they will be able to be more involved in the shared care of children and elderly in the future. They will both be encouraged to take the courses that will lead to higher skills, such as in computers, mathematics, and science courses.

2. Parents and community persons must become more involved within the schools. Only they will be able to reinforce and help maintain the raising of standards in the schools. They will be in a position to help youth target the market place skills that are needed now and in the future.

II. Young Parents and Single Parents

A. Federal And State Governments

1. Part time workers should be employed at the same levels, with benefits, as those who work full time. This will allow women to work, and to still take care of elderly, infants, and young children.

2. Provisions should be made for free or low cost care for dependent adults and children in a variety of settings: home care, family care, respite care, center care and work site.

3. Part-time placements in centers will be necessary and should be made available through funding from the state or federal government.

4. The first pregnancy must be avoided. The present rules tend to prevent fertility information being made available until a child is born. It is too late to prevent educational deprivation once a child is born. Information should be routinely made, to both males and females, starting in the sixth grade. Federal rules referring to sex education and fertility control should be eliminated.

5. Families live in a diversity of living arrangements and family structures. Teen mothers should not be forced to stay with their family of orientation and should be allowed to use benefits with other extended family members. They are often pregnant as the result of incestual sexual abuse and should not be required to remain at home.

B. Private Industry

1. Families tend to prefer home care, then center care, and then on-site care. Subsidies should be made to allow for a variety of child care arrangements.

2. Tax incentives should be provided to private firms that have child care and elder care centers on their work sites or clustered with other firms in a central location. This care must be provided for persons who are dependent upon those people who are required to work other than the regular workday.

3. Sick child and elder care is a priority. Special tax incentives and programs are needed to ensure that they will be available. Separate rooms, with a nurse in attendance, is the preferred care at the regular care centers. Mothers are unable to leave work to carry dependents to another site.

4. Centers should be set up that are similar to those that were established during World War II. When mothers worked in defense plants, they brought their children in early and also brought an empty casserole dish. When the mother returned in the evening, she was given a filled dish to take home for dinner. This would alleviate some of the strains of working, child care, and food preparation.

5. The overdependence on unhealthy fast food should be cut. Many children will go through the entire week on hamburgers, for the mothers are simply just too tired to cook. Firms can have meals ready to take home for a small fee.

C. Public Schools

1. Girls must be made to feel that there are other alternatives to adulthood, other than through motherhood. Programs should be started in elementary school to allow them to: (1) learn about career opportunities; (2) learn the basic skills that will be required in futures other than those that include babies; and (3) increase their self esteems and future expectations.

2. Child care sites should be in every junior and senior high school that has a pregnancy or drop out rate of 20 percent or higher.

D. Higher Education

1. Child care programs should be on site at every junior college and community college in order to help more single mothers and young women and men to seek higher education.

III. Young Males

A. Federal And State Governments

1. Realizing that the low involvement of young men in the labor market is strongly related to their inability to marry, even if a childbirth is imminent, it is necessary to design approaches to move them into the education and job training that will allow them to have the needed skills.

2. Fathers of children born to teens must be made to be responsible for their children. Child support payments should be mandatory, as if they were married.

B. Private Industries

1. Funds will need to be obtained from foundations in order to try new approaches and the run experimental programs to provide job skills and training. We must be sure that organizations who set up programs are not allowed to "cream" off the better prepared participants, and attempt to get support for a particular type of program.

2. There is a need for many different types of programs that address the different needs of different geographic, service areas, and industrial needs that must be met with trained workers.

C. Public Schools

1. Every attempt should be made to reach Hispanic, Black, and Native American young men to help them remain in school. We need to

get to these youth before the attraction of the drug markets and other illegal activities becomes too great.

2. They will need to be exposed to role models in elementary school, and in later years, that will instill in them continuous images of people who were from their own groups who had been able to be upwardly mobile.

3. Masculinity is a concern for this group. If one is not allowed to demonstrate male adulthood in socially acceptable ways, then non-legal and socially unacceptable avenues will be assumed. Making a baby is one of these avenues that too many take for no other ways are open for them. They will need to be repeatedly exposed to programs that would equate supporting a baby and its mother with the true handmark of a man.

4. School and literary program, such as the previously mentioned Family Literacy Project, should be instituted for men who have dropped out of schools. The concept however is the same: they will help their children by helping themselves. The details of the programs need to be geared to males, for they will not be able to enter freely in a program designed for females. Programs of skills training and literary will need to be separate from those designed for women, but should allow interaction between both programs.

D. Higher Education

1. Post secondary programs will have to be instituted that give skills training, job related instruction, and work skills; at the same time basic literacy will need to be stress. All are geared to the service and industry needs of a skilled population.

2. Financial aid is needed by many students from minority groups. Grants and loans are an acceptable means of achieving the goal of higher education. More funds need to be made available.

3. There is, however, a growing sentiment that there should not be a "free ride." For this reason a suggestion has been made that students should volunteer their services to the military or to National Service for two years before college (Wilson, R., 1989b). Under such a plan the youth would work in their home community, earn a pay that would cover basic needs of food, shelter, and medical care. At the same time an amount of approximately $100-150 per week will be set aside in a trust fund for later educational expenses. In this manner a youth can work and earn $10,400 for college expenses.

IV. Research

A. Federal And State Governments

Requests for proposals will need to be issues by the various Departments of the government that will look at the means that are most effective in reaching and retaining minority individuals.

B. Higher Education

1. More university research should be funded on the most effective means for teachings low income students to ensure that they have the basic skills and advanced training that will be needed for the new jobs.

2. We will need to look more closely at the individual ethnic groups and establish areas that may be built upon to enhance achievement of the skills that are needed.

3. Universities will need to mount research to find ways to prevent the first pregnancy. Many funds have been spent on avoiding

pregnancy, but only on girls who have had children. We need to know more about the appeal of having babies and to find out if the prospects of achieving education is indeed the only way to ensure that the mother receives an education.

4. In light of the trends that are expected for the year 2000, universities should be invited to be innovative in solving the problems of moving low income, minority youth and more women into the future labor market.

REFERENCES

Alexander, Karl and Doris Entwisle. Achievement in the First 2 Years of School: Patterns and Processes. Monograph of the Society for Research in Child Development. Serial No. 218,53(2). 1988.

Brown, Claire and Joseph Pechman (Eds.). Gender in the Workplace. The Brookings Institute. 1987.

Children's Defense Fund. An Analysis of the FY 1987 Federal Budget and Children. Washington, D.C. 1986.

Daniels, Lee. "College-School Collaborations in a Critical Period." New York Times. May 24, 1989, p. 8.

Deitch, Cynthia and Susan Walsh Sanderson. "Geographic Constraints on Married Women's Career." Work and Occupations. 14 (4), 1987: 616-634.

Diesenhouse, Susan. "Harvest of Diplomas for Boston Poor." New York Times, May 24, 1989, p. 9.

Edelman, Marian W. Families in Peril, An Agenda for Social Change. Cambridge: Harvard University Press. 1987.

Eishtain, J. B. The Family in Political Thought. Amherst, MA: University of Massachusetts Press. 1982.

Farley, Reynolds and Walter Allen. The Color Line and the Quality of Life in America. New York: Russell Sage Foundation. 1987.

Fiske, Edward. "Lessons: Dropout Mothers Back In, and Bring Their Children, To End a Cycle of School Failure." New York Times, February 22, 1989: B10.

Glick, Paul. "Demographic Pictures of Black Families." In McAdoo, Harriette (Ed.). Black Families (2nd edition). Newbury Park, CA: Sage Publications, Inc. 1988: 111-132.

Gordon-Bradshaw, Ruth. "A Social Essay on Special Issues Facing Poor Women of Color." Women and Health. 12 (3/4) 1987.

Greenstein, Theodore. "Social-Psychological Factors in Perinatal Labor-Force Participation." Journal of Marriage and the Family. 48, 1986: 565-571.

Gross, N. and A. E. Trask. The Sex Factor and the Management of Schools. New York: Wiley. 1976.

Hartmann, Heidi. "Internal Labor Markets and Gender: A Case Study of Promotion." In Brown, Claire and Joseph Pechman (Eds.), Gender in the Workplace. The Brookings Institute. 1987, 59-106.

Houseknecht, Sharon, Suzanne Vaughab, and Anne Statham. "The Impact of Singlehood on the Career Patterns of Professional Women." Journal of Marriage and the Family. 49, 1987: 353-366.

Johnson, Julie. "Schools Faulted on Educating Blacks." Panel of the Committee on Policy for Racial Justice. New York Times. May 24, 1989, p. 8.

Kemp, Alice and E. M. Beck. "Equal Work, Unequal Pay, Gender Discrimination Within Work-Similar Occupations" Work and Occupations. 13(3), 1986: 324-347.

LaRocco, J. M., J. S. House, and J. R. P. French. "Social Support, Occupational Stress, and Health." Journal of Health and Social Behavior. 21, 1980: 202-218.

Lorance, Jon. "Gender Differences in Occupational Labor Market Structure" Work and Occupations. 14(1) 1987: 23-61.

McAdoo, Harriette P. "Minority Families." In Stevens, Joseph and Marilyn Mathew (Eds.) Mother/Child Father/Child Relationships. Washington, D.C.: National Association of Young Children. 1978: 177-195.

McAdoo, Harriette P. "Family Changes within African-American Families." Smith College Journal, School for Social Work. 5(1), 1987: 19-22.

McAdoo, Harriette. Ethnic Minority Families: Strength in Diversity. Newbury Park, CA Sage Publications. 1989 (in press).

Mangan, Katherine. "Colleges Introduce Undergraduates to Research With Eye to Building Future Pool of Professors." The Chronicle of Higher Education. May 24, 1989, p. A29.

National Committee On Pay Equity. Pay Equity: An Issue of Race, Ethnicity and Sex. Washington, D.C. 1987.

Nickens, Herbert. "A Health Agenda for Blacks." Washington Post January 16, 1989: A21.

Regan, Mary & Helen Roland. "Rearranging Family and Career Priorities: Professional Women and Men of the Eighties." Journal of Marriage and the Family. 47 (4) 1985: 985-992.

Rich, Spencer. "Single-Parent Families Increase." The Washington Post. February 16, 1989: A7.

Rich, Spencer. "Home Nurse Visits: Many Benefits For Low-Income Women, Children." The Washington Post. February 16, 1989: A21.

Sawhill, Isabel. "Poverty in the U.S., Why Is It So Persistent." Journal of Economic Literature. 26, 1988: 1073-1119.

Seccombe, Karen. "The Effects of Occupational Conditions upon the Division of Household Labor: An Application of Kohn's Theory." Journal of Marriage and the Family. 48, 1986: 839-848.

Select Committee on Children, Youth, and Families. U.S. House of Representatives. "Working Families at the Margins: The Uncertain Future of America's Small Towns." April 11, 1989, p. 1.

South, Scott, William Markham, and Judy Corder. "Sex Differences in Support for Organizational Advancement." Work and Occupations. 14(2) 1987: 261-285.

Tucker, Sharon. "Careers of Men and Women MBAs, 1950-1980." Work and Occupations. 12(2), 1985: 166-185.

U.S. Bureau of Labor Statistics, unpublished tabulations. Quoted in Williams, Rhoda. "Beyond Human Capital: Black Women, Work and Wages" Working Paper No. 183, Wellesley College Center for Research on Women. 1988.

U.S. Department of Commerce. A Statistical Analysis. Women in the United States. Series PP-23, No. 100. Washington, D.C. Quoted in Gordon-Bradshaw, Ruth. "A Social Essay on Special Issues Facing Poor Women of Color" Women and Health. 12 (3/4) 1987.

U.S. Department of Labor Opportunity 2000: Creative Affirmative Action Strategies For a Changing Workforce. 1988.

U.S. Department of Labor Workforce 2000: Work and Workers for the 21st Century. 1987.

Welsh, Patrick. "The Cult Of the Super-Girl." The Washington Post. December 18, 1988: C1.

Wilson, Reginald "Black Males Increasingly Rare in College." Quoted by Barbara Vobejda in The Washington Post, January 16, 1989: A7.

Wilson, Robin. "Indentured Servitude" The Chronicle of Higher Education. February 15, 1989: A19.

York, Reginald and H. Carl Henley. "Women and Social Work Bureaucracy." Journal of Applied Social Science. 12(1) 1988.

26. FACILITATING WOMEN'S OCCUPATIONAL INTEGRATION

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26. FACILITATING WOMEN'S OCCUPATIONAL INTEGRATION

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Introduction

Occupational sex segregation is one of the most obvious facts of economic life. All that we know about other cultures, other economic systems, other times, testifies to the universality of the phenomenon. There is little question that it has been and continues to play a central part in the generation of women's economic and social subordination. Occupational segregation also figures prominently in stratification by race. Yet relatively little is understood about the causes of occupational segregation, the institutions, regulations, and habits that maintain it, the forms it takes, the changes it undergoes, and its possible cures.

Sex segregation in the labor market entails the physical and social separation of women and men into different categories of workers. Occupational segregation by sex involves more than separation into different occupational categories. It can include separate workplaces, departments, career ladders, fields of specialization, and/or responsibility for different types of clients or customers. One prevalent example of such intraoccupational segregation occurs among waiters and waitresses. Most restaurants still have single-sex crews working at any particular meal, with male waiters concentrated in the higher-priced establishments (Bergmann, 1986). Therefore, any evaluation of progress in occupational integration needs to be sensitive to all facets of segregation.

We lack a systematic body of research into the causes and mechanisms of occupational segregation. We also lack extensive documentation of the results of attempts to ameliorate it. Even its current extent is poorly measured. This limits our ability to present a firm blueprint for improvement. Nevertheless, we can point to some of the findings and experiences that give valuable indications of fruitful directions for both action and research. Since most quantitative measures of occupational segregation can only capture segregation between occupational categories, case studies of specific occupations are more useful in presenting trends in intraoccupational segregation. The analytical focus of this paper is several critical categories of nontraditional blue-collar and white-collar work such as construction trades, elite professions, and management.

The first section of this paper defines the extent of occupational segregation by sex and presents alternative perspectives on its causes. This includes a historical example of the process of occupational integration and resegregation. The second section reviews recent trends in occupational integration, especially the pace of integration as measured by the segregation index.

This is followed by a discussion of the factors which influence the extent of occupational integration. These factors are then used to analyze specific trends where they have been documented in occupational integration of blue-collar trades, professional fields, and management. The effect of technological change on occupational integration is considered in a separate section, where two questions are addressed. The first is whether job loss in female-dominated occupations will hasten integration; the second is whether emerging occupations and industries have avoided replicating patterns of segregation. Finally, in light of the analyses presented in the literature surveyed, policy recommendations are presented in the final section.

The Extent and Explanations of Occupational Segregation

An idea of the extent of occupational segregation by sex in 1984 can be discerned by looking at the sex composition of finely detailed occupations, as compiled by Bergmann (1986), and reprinted in Table 1. The most conservative definition of a sex-segregated occupation is one that is either 75 percent male or female. By this definition, 211 out of 335 occupations were either male-dominated (154) or female-dominated (57) in 1984. Most men and women worked in segregated occupations. Half of full-time women workers were employed in only 55 of the most female-dominated occupations, while half of full-time male workers were concentrated in the 131 most male-dominated occupations (all of which have less than 18 percent women). Thus, Table 1 indicates not only that most occupations are highly segregated, but that women are concentrated into a smaller number of occupations than men are.

Occupational segregation stems from tradition, from the historical domestic division of labor, from attitudes, and from restrictions on women's choices resulting from current discriminatory practices in the labor market. To the extent that segregation reflects restrictions on choice, it is a matter of public policy concern. (See Reskin and Hartmann, 1986). The majority of the case studies and descriptions of segregation in this paper concur that discrimination is a highly significant element.

A common explanation of past and current segregation especially favored by economists with faith in the impersonal fairness of competitive markets is that segregation results not from a conscious design of employers, but by the free choice of women themselves. According to this perspective, women choose training and adapt their work lives to the expectation and requirement that they provide child care and household services, with men exempted from such duties (Polachek, 1981; Becker, 1985). Those who espouse this view suggest that segregation is not a problem for women or for society; if it is a problem, its source is not discrimination in the workplace.

Even if in the past women's employment decisions have been an important factor, women will not be able to choose a secondary position in the labor market in the future. An increasing proportion of women do not have a male to support them and must rely on their own earnings for support (Bergmann, 1986). Further, as in race relations, sex segregation is not merely a neutral separateness; it entails inequality and subordination of women to men. It is not that men and women merely do different things, but that men's and women's occupations are arranged so that women are subordinate to men on the job, as in the doctor-nurse and executive-secretary dyads (Reskin, 1988). Moreover, sex segregation leads to wage inequality: jobs which are female-dominated pay less than male-dominated jobs requiring similar amounts of human capital (Treiman and Hartmann, 1981).

There is a considerable literature that portrays occupational segregation as an expression of male dominance in society. In past times, a major motive for segregation may have been to limit women's social contact with men to control women's sexuality (Reskin, 1988). Hartmann's (1983) view is that the job market is structured to perpetuate male dominance. Men benefit through access to jobs with higher wages and women's economic dependence, both sustaining the domestic division of labor. Men also benefit from access to jobs with interesting work and jobs that give them scope for personal autonomy and development of talents (see also Reskin, 1988).

Historical Dynamics of Segregation and Resegregation

A case study by Cohn (1985) on the introduction of women into clerical jobs at the turn of the century provides considerable illumination regarding the process of segregation and the barriers women face when they enter jobs atypical for them. The impetus to recruit women as clerical workers came from top management concerned with reducing wage costs. Only where large groups of workers would be affected, representing an important business cost, was there an interest in introducing women. Thus, the expansion of office work and a subsequent growing demand for labor encouraged management to hire women. This meant that when women entered into a workplace, they were not sprinkled at random over the entire shop, but introduced in large, segregated occupational groups.

Middle managers closer to actual operations, more interested in worker relations than costs, fought a vigorous battle to prevent women's entry. Male workers and their unions also fought to exclude women from their workplaces. Among the rationales used were: (1) the difficulty of preventing contact between men and women workers, (2) the "facilities problem," and (3) women's alleged inability to do the work. Where upper management perceived potentially substantial cost savings, these rationales were swept aside and the fight to exclude women was lost.

To assuage male workers and maintain their productivity and morale, management maximized men's promotional opportunities. This could be accomplished by the creation of a group of jobs which were understood to be dead-end jobs; these could be occupied by women. Women could be rotated through those jobs by requiring them to leave upon getting married. Hence, it would be unnecessary to give women a long series of periodic wage increases to keep them motivated since they were often required to quit upon marriage.

In this context it should be noted that the issue of turnover is still salient in occupational sex segregation. Women are no longer required to quit when they marry, but their alleged greater propensity to quit serves as a rationale to deny them on-the-job training or access to certain jobs. Research has, in fact, shown that men and women have similar propensities to quit if they are paid the same wages (Viscusi, 1980; Blau and Kahn, 1981). Assigning women dead-end jobs and lower salaries thus ensures turnover will be maintained. Therefore, such modern personnel methods have obviated the necessity for firing women upon marriage. By using these tactics, employers deliberately encourage high turnover rates to cut costs. Cohn (1985) calls this "synthetic turnover."

A view of the function of contemporary occupational segregation is given by Bergmann (1986). Job segregation insures that women and men do not interact as equals, that women do not supervise men, that men have access to positions which help train them for advancement, and that women and men in positions requiring equivalent human capital are not able to compare their salaries. Thus, like the feminization of clerical work, contemporary efforts to integrate women into skilled trades, the professions, and management have faced segregation within nontraditional workplaces and promotion barriers.

Recent Trends in Occupational Sex Segregation

Women's labor force participation rate increased from 50.0 percent in 1978 to 56.6 percent in 1988. The influx of women into the labor force has meant an increase in the percentage of women in many occupations, traditional and nontraditional. However, to evaluate whether the pattern of occupational segregation has truly diminished, we need to consider whether the distribution of women across occupations is changing as well.

The single largest occupational category of women workers is administrative support/clerical workers (see Table 2). But the percentage of women in this occupational group has declined almost 3 percentage points in the past decade. The greatest improvement in the distribution of working women in nontraditional work was in management. Women have also increased their distribution among the professions and sales occupations, and slightly among technical and craft occupations. The integration into craft occupations has been slow. This represents a severe detriment to women because craft occupations generally represent the best pay and opportunities for workers without a college degree.

With the of exception craft, clerical, and service workers, the direction of trends for men and women are the same. Both men and women have moved into sales work, professional and technical work and moved out of the categories of operators and farming. The integration of operators, fabricators, and laborers may have been halted by the absolute decline in the number of blue-collar jobs in the 1980s. It is difficult to tell where real gains were made, though, with such aggregate data.

The extent of occupational segregation is frequently measured by a "segregation index," or "index of dissimilarity." This index is used to quantify broad changes in the degree of segregation over time. Although the segregation index has limitations which will be discussed, it signals general trends. Exact values for the segregation index vary depending on the data set used, the aggregation of the occupational categories, and whether the index is standardized for changes in the occupational composition of the economy.

The formula used to compute the segregation index, S_t is:

$$S_t = 1/2 \ \Sigma_i \ |m_{it} - f_{it}|$$

where m_{it} and f_{it} are the percentages of the respective male and female labor force that are in occupation i during year t. This gives a number between zero and 100 (Blau and Hendricks, 1979). The index is zero when the distribution of women across occupations is the same as men's distribution. The index is 100 when all occupations are either totally male or totally female.

A decline in the index can be caused by changes in the sex composition of specific occupational categories. However, the index can also decline because of changes in the occupational structure or mix in the economy. If a relatively integrated occupation grows in the number of people employed, while a relatively segregated occupation shrinks, the index will decline but no new occupations will have been integrated (Blau and Hendricks, 1979). It is possible to test for these differences.

Estimating the segregation index in the 1980s and comparing trends with earlier decades is especially difficult because Census and Current Population Survey occupational classifications changed in 1980 and 1983 respectively. A study by Beller (1984) calculated an economy-wide segregation index of 61.66 for 1981, and estimates that the segregation index declined 2 - 3 times as rapidly during the 1970s as during the 1960s. When results were standardized to measure only the changes in composition effects (holding the occupational mix constant), Beller found almost as strong a decline in the index. This indicates that the segregation index fell because occupations became more integrated, not because previously integrated occupations became more prevalent.

Since the decennial Census provides the most accurate and complete data for estimating the segregation index, we will not have the best picture of trends in the current decade until the 1990 Census data is available. However, some projections for the 1980s have been made with available data. It is doubted that the rate of change of the segregation index in the 1970s will be sustained during the 1980s, since projected growth of the female labor force has slowed (Beller and Han, 1984).

Looking at segregation within large occupational groups reported in Table 3, the largest declines in the segregation index between 1970 and 1980 were in the managerial and professional specialty (from 55.5 to 42.9) and in the service occupations (from 67.6 to 55.1). The smallest decline was in precision production, craft, and repair occupations.

The specific occupations responsible for the overall decline of the indexes of these large occupational groups include accountants, elementary school teachers, bank officers, sales clerks, telephone operators, and delivery and route workers. Changes were greater for white-collar than blue-collar occupations; this was true for both white and minority women, but other major differences by race exist. White women reduced their rate of entry into a number of traditionally female white-collar occupations which minority women, leaving private household work, continued to enter (Beller, 1984).

Beller and Han develop projections to 1990 which indicate that the segregation index will continue to decline more for younger age cohorts than those already following a particular career path. This raises the question of how quickly changes in educational and career choices of those first entering the labor market can integrate an occupation, given a pool of older workers still remaining in their current fields. Beller and Han examine this question by focusing on how integration of college majors can be expected to impact occupational integration of the professions. As the most "optimistic" scenario, they assume that college majors will continue to integrate as fast as in the 1970s. Under this assumption of a linear rate of decline in the segregation index among college majors, Beller and Han (1984) project the segregation index for professional occupations would fall as low as 42.6 in 1990. At the present rate of change, complete integration of college graduates by major would occur in the year 2009; but the segregation index for professional occupations would still be 23.9. Thus, even with an optimistic assumption about young cohorts, occupational segregation by sex would persist into the next century.

Thus, even under the most optimistic conditions, they conclude that policies which influence occupational choice and entry would affect occupational integration at a very slow pace. Furthermore, Beller and Han note that it is unlikely this optimistic scenario, which assumes that social change will continue at the same rate, will occur. Beller and Han do not expect that the preferences of young cohorts will continue to change at an equally rapid pace. Therefore, policies which reduce female attrition in nontraditional occupations and which encourage affirmative action among older workers are also necessary to sustain dramatic declines in segregation (Beller and Han, 1984).

The segregation index is useful in gauging trends. However, it underestimates by far the degree of occupational segregation that American workers actually experience in their workplaces. The published index depends on data that do not reflect segregation within occupations, and the extent to which employers hire all men or all women in a particular job.

Factors Affecting Occupational Segregation

Researchers and practitioners have identified a variety of factors which can facilitate or limit women's occupational integration. First, the number of women entering nontraditional occupations depends on the choices of workers, influenced by factors such as their early socialization, educational choices, and training. To address these issues, there has been a flourishing of public and private programs designed to counsel and train women for nontraditional occupations, especially pre-apprenticeship training.

On the other hand, a range of legislative, institutional, and informal opportunities or barriers determines employers' demand for workers by sex. It has been easier to pass laws mandating equal opportunity and affirmative action than to eliminate institutional and informal obstacles. These include sexual harassment or coworker hostility, outmoded administrative rules and procedures by employers and unions, biased assignment practices by personnel managers, gender-tracked promotional ladders, and policies which facilitate intraoccupational segregation in the workplace. Demand for workers in different occupations is also influenced by overall macroeconomic trends in the economy and microeconomic changes within firms and industries. Economic factors such as employment growth, sectoral shifts, technological change, and organizational size can affect the level and pace of occupational integration.

The following sections review how these factors have influenced trends in nontraditional blue-collar, professional, and managerial occupations. Each section highlights trends, then examines factors influencing entry and retention in specific nontraditional fields.

Integration of Blue-Collar Work

Trends

Blue-collar work consists of a range of occupations, some of which have always had a significant number of women workers. For example, 40 percent of machine operators are women. They operate winding, twisting, separating, filling, painting, slicing, and sewing machines. But wages paid to operatives are lower than those in the high-paying skilled trades (O'Farrell, 1988). Minority women are more highly represented than white women in these lower status operative positions.

We can see some growth in the number of women training for and entering higher-status skilled blue-collar crafts in Table 4, although their representation is still small. What may be viewed as promising is that the percentage female is greater for women apprentices versus women currently employed, with the exception of the two female-dominated categories: cosmetologist and physical therapist. The national data on apprenticeship training by trade presented in Table 4 is available only since 1987. With more longitudinal data in future years, we will be able to assess whether the relatively higher representation of women in apprenticeship than employment is due to attrition of experienced women workers or to healthy growth. If future women apprentices gain and retain employment in the trade in which they have trained, this would mean that more and more women are successfully integrating the nontraditional crafts. Hence, whether apprenticeship training will affect the employment percentages in the next decade will depend upon women having successful apprenticeships, good job placements, and tenure in the nontraditional occupations over time.

Women's progress in the crafts has been creeping along or stagnant, depending upon the occupation surveyed. Between 1960 and 1980, the percentage of electricians who were women increased from 0.7 percent to 1.2 percent and the percentage of carpenters who were women increased from 0.4 percent to 1.5 percent (Lillydahl, 1986). But in 1988, women were still only 1.5 percent of carpenters and 1.4 percent of electricians. Finally, looking at the construction occupations in Table 4, we find that women are more likely to be training for the jobs with the lowest median weekly earnings for full-time workers: painters ($323) and carpenters ($365), instead of the premium construction jobs of bricklayers ($441) and plumbers ($465) (U.S. Department of Labor, 1987).

Factors Facilitating Entry

The following sections review factors influencing these trends in blue-collar occupations. First, the role of legal changes and federal regulations in increasing the demand for tradeswomen is discussed. However, the first "pioneer" women in these occupations frequently found themselves insufficiently trained for their new fields. This led to a policy emphasis on alternative programs preparing women for nontraditional work. Alternative routes to entering the crafts were also developed to address institutional policies and patterns in apprenticeship and federal job training programs that hinder women's entry.

Legal Factors as Groundwork for Change

Affirmative action and equal employment opportunity policies have, in part, facilitated the entry of some women into blue-collar jobs (Kane and Miller, 1981), especially in the construction, mining, and steel industries. However, only minor progress has been made. In construction, federally mandated goals and timetables were established by the Office of Federal Contract Compliance Programs (OFCCP) for public contractors and subcontractors in 1978. Construction contractors admit the increases in women employees would not have occurred without government goals and timetables (Reskin and Hartmann, 1986, p. 128). A "good faith effort" goal of 6.9 percent women per craft in each contract has been in effect since 1981, however no contractor has ever lost a contract or been disqualified for not meeting this goal. As of 1987 only 15 out of 50 states had met or exceeded the 6.9 percent goal for federally-aided highway construction projects, led by Utah, Idaho, Wyoming, and Washington (Reskin and Hartmann, 1986; Martin, 1988; Stanwick Associates, 1988; Johnson, 1988). Women's organizations such as Women Employed and the Women's Legal Defense Fund have expressed concern about lax enforcement efforts by the OFCCP since 1981 (U.S. House of Representatives, Serial No. 99-62, 1986).

With pressure from the federal government, nine major steel companies and the United Steelworkers of America signed a consent decree to increase the hiring of women and minorities into entry-level and craft occupations in 1974. Deaux and Ullman (1983) interviewed women who had gained access to jobs in the steel industry because of the consent decree. According to Deaux and Ullman (1983), specific outreach and recruitment were successful. However, layoffs during the 1981-82 recession in the U.S. steel industry may have undermined progress. Female employment in the industry in 1983 was lower than prior to the adoption of the consent decree stipulations (Deaux and Ullman, 1983, p. 164).

The first wave of women entered nontraditional blue-collar jobs in the 1970s, thanks to legal initiatives. For example, Walshok (1982) found that pioneer women obtained their jobs through the help of a government agency, a women's agency, or a friend or family member in similar employment. The few women who were able to persevere came from families with strong female role models and early childhood experiences with nonsex-typed activities. Successful pioneer women tended to have supportive spouses and family members. However, many felt that they were poorly prepared in the necessary skills required for their jobs.

Kane and Miller (1981) also found that most women in skilled trades were not prepared educationally, physically, and experientially. The women who managed to stay in traditionally male blue-collar jobs were more satisfied than women in clerical jobs. While male coworker hostility was a serious problem, the high pay was worth it (O'Farrell and Harlan, 1980; Schroedel, 1985).

The Emphasis on Training

The experiences of pioneer women led to efforts to ensure that women receive adequate job training. Existing apprenticeship and other formal training programs assumed a level of skills, ability, and experience that many women did not have (O'Farrell, 1978). Numerous studies (see, for example, Briggs, 1981; O'Farrell and Harlan, 1984; Roos and Reskin, 1984; Powers, 1986) as well as interviews with organizations encouraging women's entry into nontraditional occupations emphasize the importance of pre-apprenticeship training programs. (For a list of organizations contacted, see Appendix I.) These programs evolved in the 1980s to overcome some of the obstacles encountered by pioneer women. They also serve an important intermediary role in publicizing opportunities for nontraditional work and placing program participants in jobs and apprenticeships. Funding cuts in the 1980s have hurt these programs. Wider Opportunities for Women reported in 1978 that over 150 programs were able to recruit and train women for apprenticeships; only 50 remain after training and enforcement cutbacks (O'Farrell, 1988, p. 269). Several organizations contacted confirmed that funding cuts in the 1980s made sustaining their programs more difficult.

The organizations involved in pre-apprenticeship training have developed similar curricula designed to prepare women comprehensively. Components generally include (1) counseling and skills assessment to match participants with appropriate occupational choices; (2) tutoring or referrals to remedial programs for those whose test results indicate weakness in math, literacy, and basic education requirements which are prerequisites of apprenticeship programs; (3) assertiveness training and other programs to improve self-esteem, life-planning skills, and conflict resolution techniques; (4) job-seeking skills, including resumes, interviews, test-taking; (5) physical fitness to build upper-body strength and confidence (usually involving aerobics and weight-training); and (6) exposure to more than one nontraditional field. The last component includes tool familiarity and hands-on training -- either a general course in building maintenance or segments in several fields such as carpentry, welding, electronics, plumbing, etc. Some programs include talks by women in the trades and by local employers; others visit local work sites.

Some of these pre-apprenticeship programs have been developed with the cooperation of local unions. Jersey City State College's Project WORC (Women's Opportunities and Retraining for Careers) cited the cooperation of the carpenters' local as crucial to their success. Working with locals of the operating engineers, carpenters, and electricians played a vital role in creation of ANEW (Apprenticeship and Nontraditional Employment for Women) in Washington. The unions approached State government and the Labor Department to fund pre-apprenticeship training because there were not enough blue-collar women to draw upon to meet compliance regulations. In Chicago, the United Brotherhood of Carpenters and Joiners has created its own coeducational pre-apprenticeship program, in addition to accepting women who complete a program sponsored by the Midwest Women's Center. However, the union's curriculum focuses narrowly on learning about tools and basic math and carpentry skills (J. Isaacson, personal communication, 1989).

Barriers in Pre-Existing Training Programs

The pre-existing apprenticeship training programs have administrative rules or procedures which serve as barriers to women's entry. Age limits for starting apprenticeship programs (for example, 18-26 years old) hinder women who consider career changes from traditional jobs, who spend time out of the labor market, or who are intermittently employed while bearing and raising children. Preferences for veterans and sponsorship by a union member are common practices which have also inhibited women's entry (O'Farrell, 1978; Roos and Reskin, 1984; Reskin and Hartmann, 1986).

Reflecting these obstacles, in their interviews with tradeswomen Schroedel (1985) and Martin (1988) found that some experienced unions as a vehicle for bettering their lives, while others felt they were hostile, male-dominated organizations. Unions have the potential to play a more active role for women in nontraditional jobs by negotiating nondiscriminatory wages and working conditions, identifying discriminatory practices, helping to reduce coworker hostility, monitoring affirmative action agreements, and representing women with grievances (O'Farrell, 1988). In Boston, the International Brotherhood of Electrical Workers (IBEW) Local 103 sponsored a women's support group for members and trained stewards and business agents on handling sexual harassment grievances (U.S. Senate, 1988).

One of the largest barriers to entry for women is so-called narrow recruitment policies and procedures. There are several examples. Traditional recruiting sources are: high school shop classes, the military, and trade schools/vocational education classes (O'Farrell and

Harlan, 1984; Reskin and Hartmann, 1986; O'Farrell, 1988). Collective bargaining agreements often stipulate that apprentice openings be advertised only within the plant, where few women have worked (Roos and Reskin, 1984). However, O'Farrell and Harlan (1984) report that a few large corporations, recognizing the limitations of traditional recruitment, have developed aggressive external and internal recruitment.

Under traditional recruitment schemes, women will lack information about apprenticeship opportunities. The community-based women's organizations interviewed have tried to fill this void. Women are informed of opportunities in nontraditional fields through publicity campaigns and introductory workshops featuring tradeswomen panels. Some organizations begin such efforts in high schools and junior high schools, so that girls will start to be familiar with alternative career choices at a young age. These programs may include establishing individual mentoring relationships or visits to nontraditional work sites. Networks and support groups of tradeswomen also distribute newsletters publicizing current apprenticeship openings and application methods.

On the West coast, the U.S. Department of Labor's Women's Bureau has been promoting better ways to recruit women for nontraditional training openings. Advertisements in local "advertiser" papers handed out in supermarkets and shopping malls are effective, particularly if the ads mention potential pay and that these jobs are available to women (M. Mixer, Women's Bureau, personal communication, 1989).

Federal Job Training and Nontraditional Opportunities

Federal job training programs are also a potentially important resource for women who want to enter nontraditional occupations. Federal programs do service large numbers of women and minorities (Sandell and Rupp, 1988). However, federal training programs are doing relatively little to recruit and place women into nontraditional jobs.

Several major studies of job training placement under the Comprehensive Employment and Training Act (CETA) (Harlan and Hackett, 1984; Waite and Berryman, 1984; Strecker-Seeborg et al., 1984; Burbridge, 1987) found extensive tracking of women into traditional occupations, even for those who expressed a preference for sex-atypical or mixed jobs. In response to these tracking problems, the 1978 reauthorization of CETA specifically required that local administrators reduce sex stereotyping in placements. According to Reskin and Hartmann (1986), after 1978 some small CETA programs demonstrated the potential of federally sponsored training to integrate male craft and technical jobs.

Although CETA was replaced with the Job Training Partnership Act (JTPA) in 1983, which specifically required efforts to eliminate sex-stereotyping, studies evaluating JTPA's performance indicate that the same tracking problems have reoccurred. In a study of 25 Service Delivery Areas (SDAs) (Solow, 1986), only one SDA said nontraditional placements were a priority. Department of Labor statistics for JTPA program year 1987 indicate that classroom training, largely geared toward clerical work, included disproportionately high numbers of women and minorities. On-the-job training, leading to better-paying traditionally male jobs, enrolled a relatively higher percentage of men and whites (U.S. Department of Labor, 1988). As in CETA, JTPA channels women into traditionally female occupations.

While one-third of the SDAs funded small programs to provide nontraditional training for women, most of these were sponsored by nonprofit women's organizations. However, some women's organizations reject JTPA funds for nontraditional training (Solow, 1986). Several organizations we contacted felt that they did not want to limit participation to women who are economically disadvantaged as defined in JTPA. Support services such as child care are difficult to fund adequately given JTPA's ceiling on administrative and support service expenditures (Solow, 1986; Sanders, 1988). People associated with JTPA generally agree that it has resulted in a job training system that is highly sex-segregated (Sanders, 1988, p. 37; U.S. Senate, 1988).

With the passage of the Carl D. Perkins Vocational Education Act in 1984, there was a new attempt to incorporate single parents and homemakers into federally-funded training to be administered by states who desire to participate. Part of the Act requires 8.5 percent of the training funds be set-aside for single parents and homemakers and 3.5 percent of the funds be set-aside for sex equity programs. The set-asides have encouraged an influx of adult women into vocational education, especially since the set-aside programs have counseling and support services (such as child care) that reentry women need. While few programs have encouraged women to enter nontraditional fields, funding under Perkins has been crucial to sustaining the successful community-based pre-apprenticeship training programs (National Coalition for Women and Girls in Education, 1988; Wider Opportunities for Women, 1988). Thus, federally-funded job training can be a positive facilitator of women's occupational integration, but is short of meeting its legislated goals.

Factors Facilitating Retention

If women can overcome the difficulties getting into blue-collar jobs, they then are faced with how to stay employed. Attrition is a major problem (Briggs, 1981) because of sexual harassment, barriers to advancement opportunities, and intraoccupational segregation. The dropout rate within apprenticeship programs is comparable for women and men (Martin, 1988); the problems leading to attrition seem to intensify after formal training. Involuntary job loss is also a problem. Women have been disproportionately affected by changes in the macro economy since they have low seniority. One follow-up study of nontraditional graduates from San Francisco Community College Centers found that one-third of women who left the trades indicated sexual harassment was one reason; one-third indicated they were laid off or fired. However, this is based on a small sample (McCullough and Tuttle, 1988).

Virtually every researcher or organization involved with encouraging women to enter blue-collar work cite sexual harassment, hostility, and discrimination by coworkers and supervisors as a major impediment to integration in the long run (O'Farrell, 1978; O'Farrell and Harlan, 1980; Walshok, 1981; Gruber and Bjorn, 1982; Wilkinson, 1984; Roos and Reskin, 1984; Schroedel, 1985; Reskin and Hartmann, 1986; Martin, 1988; Personal communications in Appendix II, 1989).

Comprehensive pre-apprenticeship programs attempt to prepare women for the harassment encountered on the job, but most practitioners agree that the actual work situation is worse than that experienced in role playing during the training programs. Most programs emphasize teaching women how to identify sexual harassment, what their legal rights are, and techniques for assertively confronting harassment. ANEW in Washington argues for a realistic approach which, while not condoning overt harassment, also emphasizes that women need to acculturate themselves to their new work environment.

In many occupations there are special problems. For example, in police training, a high level of physical fitness is emphasized while important human relations skills (where women excel) tend to be ignored. When fitness standards go unenforced, coworkers begin to stereotype and claim a lack of confidence in them (Martin, 1988). One other study indicated that women truckers faced harassment, but were able to avoid it if they rode with husbands or boyfriends. Having a male sponsor enabled them to escape sexual harassment (Lembright and Reimer, 1982).

The second most common reason for attrition and discouragement cited by groups who work with blue-collar women is lack of promotional opportunities. In a study of a large organization which sponsored changes in traditionally sex-typed departments, Schreiber (1979) found that nontraditional women had low expectations about their futures in the company. Their male counterparts in typically female jobs were optimistic about promotion opportunities. Their attitudes appeared to be grounded in reality. Between 1974 and 1976, in fields nontraditional for men, men were promoted faster than women. In fields nontraditional for women, more women than men were downgraded or dropped out of their new positions (Schreiber, 1979, pp. 94 - 96).

While discriminatory attitudes are important, structural or institutional barriers in the workplace can be a severe problem as well. Structural or institutional barriers are administrative rules and procedures of the work site. Roos and Reskin (1984) document the more formalized barriers which are institutionalized in the firm's personnel practices. Once employed in a firm, most of the mechanisms that affect access to additional training, job assignment, and mobility are determined by employer practices and union procedures. For example, formal rules in promotion, transfers, layoffs, and benefits can negatively affect women bidding for or already in blue-collar occupations.

Seniority Systems

In unionized workplaces, seniority systems can negatively affect women in three ways. First, seniority counts highly towards advancement, and women may not have as much as their male counterparts. Second, seniority is a provision in many collective bargaining agreements that can determine layoffs, if they become necessary. Third, when seniority refers to sub-units of the organization, incumbents lose seniority and possibly must accept lower pay if they attempt to advance by changing jobs or transferring departments (Roos and Reskin, 1984; Bielby and Baron, 1984; Reskin and Hartmann, 1986; O'Farrell, 1988). Given the history of segregation, these arrangements freeze past discrimination. If a woman operative (or clerical worker) considers entering a craft position, her incentive is reduced by loss of seniority if she transfers.

During the most recent recession, women lost some of the nontraditional blue-collar jobs they had fought to gain in the 1970s (Steinberg and Cook, 1981; Deaux and Ullman, 1983; O'Farrell and Harlan, 1984). The Coal Employment Project, for instance, has reevaluated its organizational mission since first opening its doors and encouraging women's entry into coal mining in 1978. Today, the Coal Employment Project is reduced to advocating programs such as parental leave for the few women who remain and assisting laid off miners collect benefits and seek new jobs.

The reform of seniority is crucial if the rate of promotion of blue-collar women is to rise above its present low level (see O'Farrell and Harlan, 1984). Some integration programs inside companies that have been successful have focused on company-wide job posting and reforming seniority systems, in addition to aggressive recruitment (Shaeffer and Lynton, 1982; O'Farrell and Harlan, 1984).

Promotional Opportunities and Intraoccupational Segregation

The other major barrier to promotional opportunities is intraoccupational segregation. It is argued that employers hire women into blue-collar jobs in order to appear to comply with equal employment opportunity (EEO) and affirmative action requirements, but track them into different job categories with shorter career ladders. Thus, women are hired at the entry level, but concurrently placed in newly created female "job ghettos." These practices maintain sex-segregated occupational hierarchies which have traditionally assigned women and minorities to jobs with shorter career ladders (Harlan and O'Farrell, 1982).

In the steel industry Deaux and Ullman (1983) found that women were not receiving the opportunities to acquire skills that would enable them to assume foreman positions, such as serving as a subforeman on an occasional basis. Further, inadequate on-the-job training sometimes holds women back in the crafts. Women apprentices may rotate jobs so quickly that they do not have time to master the skills to enable them to be eligible for promotion (Walshok, 1982). In a large company, Harlan and O'Farrell noted the increased female enrollments in the firm's apprentice program. But women of both races were disproportionately placed in the least skilled jobs at the bottom levels of the plant hierarchy. The women interviewed believed their upward mobility chances were slim (Harlan and O'Farrell, 1982, pp. 371 - 72).

In a larger study of 400 California establishments, employers were found to practice "statistical discrimination:" they reserved some jobs for men and others for women, based upon perceptions of group differences between the sexes (Bielby and Baron, 1987). Bielby and Baron also found that creating job categories with different promotional paths for women and men was much easier in large, bureaucratic workplaces with many job classifications, job titles, and employees. It was also easier to segregate women when they were a minority of the workforce (Bielby and Baron, 1984).

Full integration requires that women have access to careers with promotional opportunities, not just entry-level jobs. Successful occupational integration will have to (1) develop strategies to keep newly integrated occupations from resegregating; and (2) facilitate women's advancement into supervisory and other higher-paying positions. In addition to removing structural barriers within workplaces, we need to ensure that the initial training women receive is an adequate base for moving up on the job.

There have been few attempts to systematically evaluate the long-term effectiveness of pre-apprenticeship training programs in facilitating women's upward mobility. The programs surveyed had little or no idea of the long-term career paths of their graduates. Virtually all programs are required by funders to do some short-term follow-up (usually up to 90 days after placement). Most programs allow participants to come back to the placement service as needed, and so maintain informal contact with a select population. A few programs maintain ongoing support groups, but participation is voluntary. Every organization surveyed indicated they would like to see a systematic study of the programs' effectiveness and participants' long-term career development, but they lacked the funding and/or staff capability.

Integration of White-Collar Work

Trends

White-collar occupations include most of the occupations which are female-dominated such as clerical workers, health care workers, and teachers. However, professional and managerial white-collar occupations include the highest paid and most prestigious careers in our society:

engineers, doctors, lawyers, and financial/bank managers. Women's representation in these high-status management and professional specialties categories has been increasing since the 1960s.

A remarkable example of women's progress has been the field of accounting. In 1960, only 16.4 percent of accountants were women; in 1988 women have reached virtual parity -- accounting is 49.6 percent female. Similarly, the percent of financial/bank managers who are women increased from 19.4 percent in 1970 to 42.4 percent in 1988. Women have also made impressive gains in professions such as the following:

-- lawyers: from 3.3 percent in 1960 to 19.3 percent in 1988.

-- physicians: from 6.8 percent in 1960 to 20.0 percent in 1988.

-- college teachers: from 21.3 percent in 1960 to 38.5 percent in 1988.

-- pharmacists: from 8.1 percent in 1960 to 31.9 percent in 1988.

-- architects: from 2.1 percent in 1960 to 14.6 percent in 1988.

However, women were only 2.0 percent of engineers in 1970 and 7.3 percent in 1988. Although the proportions of black and white women in the professions are comparable, Hispanic women are underrepresented in all professional occupations, even female-dominated ones (Malveaux and Wallace, 1987).

The category of executives, managers, and administrators includes everyone from office managers to Fortune 500 executives. The percentage female of this broad category rose from 15.6 percent in 1960 to 39.3 percent in 1988. The proportion of white women who are managers is higher than the proportion of Hispanic women, and the proportion of black females who are managers is lower still (Malveaux and Wallace, 1987). In most of the sub-categories of managerial occupations in 1988, women have achieved more than 25 percent representation.

Although technically most managerial occupations are no longer overwhelmingly male-dominated, there is certainly pervasive sex segregation by industry, department, employer, job, or clientele served (Roos and Reskin, 1984; Reskin and Phipps, 1988; Reskin and Roos, forthcoming). For example, in general, women bankers felt their careers were blocked because they are predominantly managers of small, branch banks with little direct advancement possibilities in the organizational hierarchy. In contrast, male bank managers predominate in larger banks and in commercial banking, where advancement opportunities are greater (Reskin and Roos, forthcoming). Finally, in most companies, top and even middle management remains a white male preserve (Hymowitz, 1989).

Factors Facilitating Entry

As in blue-collar jobs, women's entry into management and the professions has been facilitated in part by government policy. Due to targeting of the banking industry by the OFCCP, for example, the category of bank managers has become an integrated occupation (Reskin and Phipps, 1988; Reskin and Roos, forthcoming). Federal enforcement of anti-discrimination laws by the Equal Employment Opportunities Commission (EEOC) in the 1970s prodded the insurance industry to recruit and employ women in nontraditional jobs such as sales agents (Reskin and Roos, forthcoming). However, in the specific case of insurance adjusters and examiners, Phipps (1989) argues that there is only some indirect evidence that OFCCP or EEOC influence might be responsible for women's entry.

The growth of the service sector has played a major role in facilitating occupational integration of white-collar occupations. A combination of regulatory pressure and an expanding market in banking and insurance, for example, helped facilitate women's entry into financial/bank management and insurance sales (Reskin and Roos, forthcoming). Thus, macroeconomic trends played a role.

Progress in professions requiring highly specialized quantitative skills has been relatively slow. Women constitute a smaller percentage of the science and engineering workforce than they do of total employment in the professions. Researchers cite the on-going problems of early sex-role socialization, guidance counseling, and educational choices as primary factors in perpetuating occupational segregation for several science and social science professions.

Traditional sex-role attitudes may inhibit some women from developing quantitative skills or choosing nontraditional occupations. Further, many women lack support for exploring nontraditional interests (see Waite and Berryman, 1985; Berryman and Waite, 1987). Given the importance of advice and counseling in developing academic and career interests, sex-segregation may be replicated by sex-biased employment assessment and placement exams such as the Strong-Campbell Vocational Index. Moore and Ollenberger (1986) suggest that career counselors using such tests may be channeling women into historically female-dominated occupations and workplaces. (See also Marini and Brinton, 1984.)

The failure to develop quantitative skills during early school years may seriously restrict women's ability to compete for slots in traditionally male college majors (Lyson, 1984). While the choice of college major is a crucial factor affecting occupational choice and, thus integration, it appears that the study of math and science in high school is equally important (Berryman, 1983). The choices of young women only narrow as years of education increase.

An example of this is engineering. Unlike other college majors, students apply directly into engineering programs from high school; they do not sample courses in their first two years of college and then decide to enter the field. Therefore, high school socialization plays an especially important role in determining who enters engineering. This may be one reason women's progress into engineering has been slower than other professions, even others requiring quantitative skills (Bergmann, 1986).

Facilitating Retention Within the Professions

Once women do enter the professions, they face intraoccupational segregation. Women physicians, lawyers, engineers, economists, pharmacists, professors, and scientists, for example, are segregated by industry, employer, or field of specialization (see Strober and Reagan, 1976; Epstein, 1981; Butter et al., 1985; Roos and Reskin, 1984; Bergmann, 1986; Reskin and Roos, 1987; Sokoloff, 1987; Figart, 1988; Reskin and Phipps, 1988; National Science Foundation, 1988).

The National Science Foundation points out that women scientists are overrepresented in government and academic jobs. Women scientists and engineers are also less likely than men to be in management (National Science Foundation, 1988; Reskin and Phipps, 1988). Women pharmacists are concentrated in hospitals and discount chains, whereas men are in research and industry, where pay scales are higher. Although 40 percent of law students are women, women lawyers are concentrated in government jobs, in research rather than litigation, and in certain specialties such as matrimonial law, real estate, and trusts and estates. Women lawyers are also less likely to run their own practices (Epstein, 1981; Reskin and Phipps, 1988). Women doctors are underrepresented in surgery, but overrepresented in pediatrics, anesthesiology, and psychiatry (Reskin and Phipps, 1988).

Factors Facilitating Entry and Advancement in Management

Unlike the professions which require extensive formal training and accreditation, entry into management can occur in a variety of ways. Like blue-collar trades, advancement in management depends upon active recruitment and informal sponsorship and training. O'Farrell and Harlan (1984) argue that recruitment of women into entry-level management may require expanded effort; firms should search broader geographic areas and hire recruitment firms if necessary to achieve affirmative action. Women's colleges should not be overlooked (Shaeffer and Lynton, 1982). Organizations need to consider expanding administrative support job descriptions to include more responsibility as a bridge into management.

Gaining access to informational networks and mentors is essential to upward mobility in management (Kanter, 1977; Harlan and Weiss, 1982; Shaeffer and Lynton, 1982; Roos and Reskin, 1984). A case study of financial managers by Bird (1989) reveals that at higher levels of management (such as vice president), women had limited access to information about openings in their own banks and in other banks.

The attitude of coworkers and supervisors (in top management) is also an important factor affecting the pace of integration at all levels of the hierarchy. Management tends to be a closed circle in which social homogeneity becomes a factor for entry. Therefore, black female managers are less likely than their white counterparts to have corporate sponsors (Fulbright, 1987). Women who are able to enter managerial positions from clerical or operative jobs may face additional barriers to promotion. Often they are seen as qualified for their current position, but not for further positions in management since they may not have the same education and experience as other managers (Kanter, 1977). Sexual harassment is also a barrier, as are sabotage and more subtle expressions of hostility (Kanter, 1977; Malveaux, 1982; Roos and Reskin, 1984). Strong human resource programs which fight bias and harassment and which clearly outline promotion possibilities and available training are an important remedy.

A program at Corning Glass Works was able to (1) lower the attrition rates of women and black managers to equal that of white males and (2) increase the movement of women and blacks into middle and top management. The chairman of Corning ordered that top executives' assistance to women and minorities in reaching their fullest potential would influence the managers' own promotions. In order to fill top management openings, Corning is broadening its traditional promotion policy by not only promoting from within, but becoming active in regional black and women's professional groups to locate talent.

Workshops have raised awareness of subtle forms of bias (Hymowitz, 1989). In another model effort, Motorola requires middle- and upper-level managers to meet equal opportunity and affirmative action goals for technical and managerial staff or else loose up to 10 percent of their earned bonuses (U.S. Senate, 1988).

The Impact of Technological Change

The research on women and technological change has not directly addressed occupational integration. Several studies address two important questions regarding occupational integration:

(1) Will traditionally female occupations be affected by job loss due to technological change, hence necessitating women's entry into nontraditional work?

(2) Are emerging high-technology occupations and industries reforming or replicating patterns of sex segregation?

Technological Change and Female-Dominated Employment

There have been a variety of attempts to predict the impact of new technologies on clerical and other traditionally female employment (General Accounting Office, 1982; Werneke, 1983; 9 to 5, 1985; Leontief and Duchin, 1986; National Commission for Employment Policy, 1986; Hartmann, Kraut, and Tilly, 1986; Hunt and Hunt, 1986; Cyert and Mowery, 1987). The pace of diffusion of technological change provides the major source of disagreement over the extent of job loss. Those who predict a rapid diffusion (Leontief and Duchin, 1986) also project rampant clerical job losses. However, most studies merely anticipate a slowing of the expansion of demand for office workers (Hartmann, Kraut, and Tilly, 1986; Hunt and Hunt, 1986; Cyert and Mowery, 1987).

Within this general trend, of course, there will be differential impact on various specific clerical occupations. Several studies predict that the lower-paid, "backroom" clerical jobs, where minority women are concentrated, will be hardest hit (U.S. Department of Labor, 1985; Hartmann, Kraut, and Tilly, 1986; Cyert and Mowery, 1987). Another concern is that automation of lower-level professional and managerial positions can potentially eliminate the few jobs which served as bridges from skilled clerical work, further reducing opportunities for women's mobility and occupational integration (Albin and Appelbaum, 1988).

Women in other job categories besides clerical work will also be affected by automation. The increasing use of microelectronics and deployment of robotics is expected to lead to a reduction of employment in industrial assembly -- one of the few areas of industrial employment that has traditionally had high female concentration (Lappe, 1985). Displaced minority and white women suffer longer spells of unemployment and more difficult job transitions than white men (Hartmann, Kraut, and Tilly, 1986; Cyert and Mowery, 1987; Flynn, 1988). Women are less likely to get lateral transfers or promotions when their jobs are displaced because it is assumed that they are not primary breadwinners in need of work or retraining (Flynn, 1988).

If jobs available in some female-dominated occupations and industries decrease or experience slower growth by the year 2000, this could be mitigated by increasing women's opportunities elsewhere in the labor market (Phipps, 1989). While some women can move into traditionally female industries such as health care, technological change only reinforces the importance of strategies to remove barriers that impede women's entry into those nontraditional occupations which will continue to grow.

High industry growth rates may facilitate occupational integration when technological change occurs. Bielby and Baron (1984) discovered a successful experience in a large bank, where employment concurrently increased by 50 percent within 7 years. Innovation appeared to be responsible for the desegregation of several administrative and data processing job classifications. Their study is supported by research on the entry of women into bank managerial positions. Among the factors encouraging this trend was the 86 percent increase in the number of bank managers from 1970 to 1980. Competition brought about by deregulation of the industry and the demand for new, automated banking services led to the proliferation of small branches and a stronger commitment to customer service. But while industry growth provided new employment opportunities, women bank managers were concentrated in the smaller, consumer-oriented banks (Bird, 1989).

The insurance industry offers another example. Phipps (1989) found that rapid growth of the insurance industry from 1960 to 1980, coupled with technological change, paved the way for women's entry into adjuster and examiner positions. However, while men remained in outside field positions, women remained in the office using the telephone or computer to process insurance claims.

Thus successful integration is facilitated when firms adopt new technology which is labor-using and implement it in a period of industrial growth. To avoid intraoccupational segregation, however, management initiatives must treat technological change as planned interventions in the firm, in conjunction with affirmative action and equal employment opportunity (see O'Farrell and Harlan, 1984).

Technological change brings about changes in work organization and job content. Working with new technologies can eliminate repetitive tasks while demanding new skills and providing new opportunities. It can also standardize procedures and embed decision-making in automated processes. Unfortunately, preliminary case studies suggest that women are hired into male-dominated occupations when technological change has lowered rather than increased skill requirements (Hacker, 1979; Strober and Arnold, 1987; Reskin and Roos, 1987; Reskin and Roos, forthcoming; Phipps, 1989). Examples of occupations where case studies indicate this trend are typesetters, bank tellers, insurance claims adjusters, telephone line installers, and several positions within the computer industry.

This raises a question: does women's entry into an occupation change the perception of the job as necessarily less skilled because a woman is doing it? While such sociological factors may play a role, the studies cited indicate that the desire to introduce women workers is primarily a cost-saving measure during periods of intensified industry competition; lowering actual skill requirements is part of this cost-cutting trend. Thus, these contemporary examples exemplify the historical dynamic suggested by Cohn (1985).

High-Technology Industries and Occupations

One measure of women's changing opportunities might be whether new and emerging occupational categories are less segregated than older job categories. However, computer-related occupations and high technology industries have not avoided traditional patterns of sex segregation; they tend to be more segregated by gender than other industries. Compared to women in other industries, women in high-tech industries are less likely to be in managerial and professional/technical jobs. (See also Kaplan, 1984.) The computer field evolved from the fields of mathematics and engineering, and took on the gender designation of the parent fields (Strober and Arnold, 1987; see also Flynn, 1988). For example, computer scientists, systems analysts, and computer programmers are disproportionately white men; most data entry operators are women, with minority women a high proportion.

Two case studies of electronic assembly workers in Silicon Valley reveal the formal and informal barriers to upward mobility in high-tech industries. For example, assemblers felt that minimal on-the-job training could prepare them to become technicians. But requirement of a college degree blocked access and reflected management stereotypes that assembly work was unskilled, even though it entailed some complex tasks and special training (Green, 1983; Katz and Kemnitzer, 1984).

To the extent that workers lack basic educational preparation and technical and scientific background, they are less likely to be able to respond to new employment opportunities. Those with scientific and technical training will be able to enter and move up in rapidly expanding jobs such as computer systems analysts, programmers, operations and systems researchers, and data processing equipment repairers, occupations projected to be among the twenty fastest growing from 1986-2000. Therefore, if women are to take advantage of growing jobs in the next decade, policy must focus on adequate training and removing barriers to male-dominated occupations (Hartmann, Kraut, and Tilly, 1986; Silvestri and Lukasiewicz, 1987; Noyelle, 1987).

The rapid growth of computer-related occupations and the replication of sex segregation within high-tech industries raises important questions about the focus of most efforts at occupational integration. While efforts to integrate blue-collar fields continue to be vital, a broader attack on the problem of nontraditional work for women is needed. Community-based training needs extension to all nontraditional fields requiring different education levels (B. Makris, Wider Opportunities for Women, personal communication, 1989).

However, occupations that are declining should not be ignored because there are still job openings due to turnover. With women so severely underrepresented in skilled trades, there is considerable room for improvement in these still-important occupations (Bergmann, 1981).

One example of an uncommon approach is the program of the Women's Technical Institute in Boston, which complements another Boston group, Women in the Building Trades. The Institute offers full-time and part-time programs in electronics, drafting, surveying, technical writing, office machine repair, and other technical fields. Local businesses have cooperated by donating equipment, and placement with local employers is as high as 94 percent. Now in their 13th year, the Institute sent out questionnaires to all locatable graduates. Although the response rate was low, 85 percent indicated that they were still in the field for which they trained (M. A. Noel, Women's Technical Institute, personal communication, 1989).

The American Electronics Association, the largest trade group for the electronics industry, has established an Electronics Education Foundation. One of the Foundation's programs consists of fellowship-loan support for electrical/computer engineering and computer science students interested in pursuing their doctorates and teaching. A goal of this program is enabling women to become faculty members and serve as role models for young women considering science and engineering. Fewer than 6 percent of electrical engineering doctorate recipients in 1985 were women; almost 15 percent of those in the faculty development program are women (U.S. Senate, 1988, pp. 124-126). Programs such as these show promise for the next decade.

Policy Implications and Recommendations

A key strategy for occupational integration has been federal and local encouragement of affirmative action and equal employment opportunity (EEO) policies by employers. When EEO and affirmative action have been a top policy priority within firms and by federal enforcement agencies, gains have been made. All other policies, programs, and individual efforts build on this foundation.

We found that in blue-collar and white-collar occupations as well as emerging high technology industries, job integration is strongly aided by macroeconomic growth and an expanding labor force. Women's chances of being hired and retained in nontraditional opportunities are increased if there is potential employment for both women and men in nontraditional and high-tech industries. Recessions, on the other hand, have a negative effect on women, displacing newer entrants into nontraditional work.

As suggested throughout our analysis of existing research and programs, the following are specific elements of a comprehensive strategy for eliminating occupational segregation in both blue-collar and white-collar employment:

Policies to Facilitate Entry

1. On the demand side, we need a strong commitment by top management to individual workplace EEO policies, with goals and timetables. Creative methods of recruitment should replace traditional sources if goals are not being met. Within occupational categories and workplaces, women should be recruited into positions with the same career ladders as their male counterparts, avoiding intraoccupational segregation. Middle and lower level managers should be monitored and given incentives to hire and promote women.

2. Administrative rules and procedures, such as veteran's preferences and age limits, which hinder women's entry into nontraditional training programs, need to balanced with affirmative action.

3. In unionized workplaces and industries, unions can play an important role in encouraging women's entry and providing training for nontraditional fields. In industries where unions have not traditionally played an active role in training entrants, they may still

be able to negotiate joint labor-management efforts to upgrade women's skills and move them from female-dominated job categories to nontraditional ones.

4. On the supply side, educational programs designed to encourage nontraditional career options for girls and boys need to be introduced at a young age, as do efforts to increase quantitative and mechanical skills. Innovative curricula may need to be developed which integrate human relations skills with quantitative and mechanical ones, so that tracking by gender does not occur. Scientific, mechanical, and computer skills must be developed as well.

5. Career counseling testing instruments need to be evaluated for bias and be reformed, if necessary. Guidance, career, and vocational education counselors' attitudes and knowledge about women's careers contribute to sex-stereotyping of occupations. Counselors must encourage women to consider nontraditional careers, not channel them into female-dominated occupations and workplaces.

6. Where women lack the requisite skills for entering training programs, pretraining or specialized curricula need to be developed. Pre-apprenticeship training offers a successful model, which needs to be utilized for other, expanding occupations. Elements of effective programs frequently cited by community-based organizations include: (a) comprehensive curricula that address women's personal development and build self-confidence; (b) targeting available jobs and providing effective placement mechanisms; (c) support of local employers, labor unions, and communities; and (d) supportive, creative staff, including women with experience in nontraditional work.

7. Federal and state programs designed to assist disadvantaged women and displaced homemakers reenter the labor market must overcome sex-stereotyping. As required by law, programs should actively encourage consideration of nontraditional fields. Because of strict post-program wage and placement requirements, some community-based organizations reject JTPA money. Whereas an apprenticeship, for example, may not have the rewards of clerical work in the short run, it may reap greater rewards in the long run. Women are encouraged to participate in training under set-asides of the Perkins Act, which allows some money to be spent for support services. Policymakers need to change program requirements to meet the specific needs of nontraditional training.

Policies to Facilitate Retention

1. Widespread dissemination of EEO and affirmative action policies, as well as clearly stated requirements for promotions, foster a receptive organizational climate. Women need to know what promotion opportunities are available, how to apply for them, and what the criteria for advancement will be. These policies help ensure that once women enter nontraditional occupations, they are not segregated into positions lacking opportunities for mobility.

2. Managers must feel that one criterion in evaluating their performance is their effectiveness at encouraging women's career development and assisting the organization in meeting goals and timetables.

3. Job ladders need to be developed in traditionally female occupations such as clerical work, as stepping stones into the professions and management.

4. Sexual and other forms of harassment must not be tolerated. Policies against sexual harassment must be disseminated. Education efforts to increase awareness of the nature of harassment are important preventative measures. Education efforts should target both men and women to increase awareness of the nature of harassment, and address more subtle forms of bias and exclusion. Federal and state training programs should require and enforce this aspect of training.

5. The structure of seniority must be reformed where it hinders affirmative action. Women should not be overlooked for job retraining and lateral transfers when job displacement occurs.

Finally, while model programs to facilitate women's entry into nontraditional white-collar and blue-collar occupations have emerged, systematic evaluation of such programs is rare. We recommend that funding be made available to independent researchers and to the organizations themselves to evaluate the relative effectiveness of the component elements of training and pre-training programs. We also recommend that the Department of Labor collect longitudinal data on women who train for nontraditional occupations via apprenticeships and alternative routes, to systematically evaluate the factors which cause attrition and facilitate retention.

TABLE 1

RANKING OF 335 OCCUPATIONS BY PERCENT FEMALE AND ACCUMULATED PERCENTAGE DISTRIBUTION OF FULL-TIME WORKERS BY SEX, 1984[a]

		Employment (thousands)			Accumulated Percentage of Workers by Sex	
Rank	Occupation	Men	Women	% Women	Women	Men
1.	Dental hygienists	b	25	100.00	.08	.00
2.	Child-care workers	1	133	99.25	.53	.00
3.	PreK/kindergarten teachers	2	203	99.02	1.21	.01
4.	Secretaries	59	3,070	98.11	11.47	.14
5.	Receptionists	11	432	97.52	12.91	.17
6.	Dental assistants	3	82	96.47	13.19	.17
7.	Typists	26	637	96.08	15.32	.23
8.	Licensed practical nurses	13	283	95.61	16.26	.26
9.	Private household workers	8	163	95.32	16.81	.28
10.	Registered nurses	52	923	94.67	19.89	.40
11.	Health record technologists and technicians	2	34	94.44	20.01	.41
12.	Teacher aides	9	150	94.34	20.51	.43
13.	Dieticians	3	49	94.23	20.67	.43
14.	Welfare service aides	2	26	92.86	20.76	.44
15.	Sewing machine operators	54	687	92.71	23.05	.56
16.	Telephone operators	14	164	92.13	23.60	.60
17.	Personnel clerks, except payroll and timekeeping	5	57	91.94	23.79	.61
18.	Data-entry keyers	26	280	91.50	24.73	.67
19.	Bank tellers	36	349	90.65	25.89	.75
20.	Stenographers	4	36	90.00	26.02	.76
21.	Bookkeepers, accounting, and auditing clerks	131	1,167	89.91	29.92	1.06
22.	Dressmakers	4	34	89.47	30.03	1.07
23.	Nursing aides, orderlies	100	760	88.37	32.57	1.30
24.	Speech therapists	5	37	88.10	32.69	1.31
25.	Material recording, scheduling, distribution clerks, N.E.C.	3	22	88.00	32.77	1.32
26.	Eligibility/welfare clerks	8	51	86.44	32.94	1.34
27.	Special-education teachers	21	132	86.27	33.38	1.38
28.	Billing clerks	18	110	85.94	33.75	1.43
29.	Hairdressers/cosmetologists	32	194	85.84	34.40	1.50
30.	Librarians	22	133	85.81	34.84	1.55
31.	Library clerks	7	41	85.42	34.98	1.57
32.	Child-care workers	23	129	84.87	35.41	1.62
33.	Interviewers	20	110	84.62	35.78	1.67
34.	Billing/posting/calc. mach. ops.	4	22	84.62	35.85	1.67
35.	Elementary school teachers	186	981	84.06	39.13	2.10

36.	Health aides, ex. nursing	42	209	83.27	39.83	2.20
37.	Physical therapists	8	39	82.98	39.96	2.22
38.	Information clerks, N.E.C.	19	91	82.73	40.26	2.26
39.	Payroll/timekeeping clerks	27	129	82.69	40.69	2.32
40.	Folding machine operators	5	23	82.14	40.77	2.33
41.	Cashiers	160	715	81.71	43.16	2.70
42.	Waiters and waitresses	96	429	81.71	44.59	2.92
43.	File clerks	41	178	81.28	45.19	3.02
44.	Public-transport. attendants	6	25	80.65	45.27	3.03
45.	Health specialties teacher	7	27	79.41	45.36	3.05
46.	General office clerks	101	374	78.74	46.61	3.28
47.	Records clerks	25	92	78.63	46.92	3.34
48.	Shoe machine operators	12	42	77.78	47.06	3.36
49.	Administrative support occupations, N.E.C.	107	363	77.23	48.27	3.61
50.	Sales workers, apparel	37	125	77.16	48.69	3.70
51.	Statistical clerks	19	64	77.11	48.91	3.74
52.	Cost and rate clerks	15	50	76.92	49.07	3.77
53.	Clinical lab. technologists and technicians	53	173	76.55	49.65	3.90
54.	Winding/twisting mach. ops.	21	67	76.14	49.87	3.94
55.	Maids and housemen	88	279	76.02	50.81	4.15
56.	Office mach. ops., N.E.C.	8	25	75.76	50.89	4.16
57.	Order clerks	40	121	75.16	51.30	4.26
58.	Legal assistants	29	80	73.39	51.56	4.32
59.	Investigators/adjustors, except insurance	75	206	73.31	52.25	4.50
60.	Electrical and electronic equipment assemblers	93	247	72.65	53.08	4.71
61.	Food preparation workers	20	52	72.22	53.25	4.76
62.	Solderers and braziers	11	28	71.79	53.34	4.78
63.	Hotel clerks	17	42	71.19	53.48	4.82
64.	Food counter and rela. occs.	23	56	70.89	53.67	4.87
65.	Mgmt.-related occs., N.E.C.	58	136	70.10	54.13	5.01
66.	Recreation workers	14	32	69.57	54.23	5.04
67.	Sales workers, other commodities	176	388	68.79	55.53	5.44
68.	Bill and account collectors	24	52	68.42	55.70	5.50
69.	Hand packers and packagers	70	151	68.33	56.21	5.66
70.	Sales counter clerks	22	46	67.65	56.36	5.71
71.	Health technologists and technicians, N.E.C.	53	108	67.08	56.72	5.83
72.	Insurance adjusters, examiners and investigators	67	130	65.99	57.16	5.99
73.	Laundering and dry-cleaning machine operators	39	74	65.49	57.41	6.08
74.	Supervisors, general office	125	232	64.99	58.18	6.36
75.	Computer operators	231	419	64.46	59.58	6.89
76.	Knitting, looping, taping, weaving machines operators	14	25	64.10	59.67	6.93
77.	Supervisors, fin. records proc.	27	48	64.00	59.83	6.99
78.	Radiologic technicians	33	58	63.74	60.02	7.06
79.	Inhalation therapists	18	31	63.27	60.12	7.11

80.	Managers, med. and health	33	55	62.50	60.31	7.18
81.	Graders/sorters, ex. agric.	33	53	61.63	60.48	7.26
82.	Social workers	144	230	61.50	61.25	7.59
83.	Supervisors, food prep./serv.	63	99	61.11	61.58	7.73
84.	Religious workers, N.E.C.	16	25	60.98	61.67	7.77
85.	Typesetters and compositors	20	31	60.78	61.77	7.82
86.	Pressing machine operators	40	62	60.78	61.98	7.91
87.	Therapists, N.E.C.	13	20	60.61	62.04	7.94
88.	Transportation ticket and reservation agents	32	49	60.49	62.21	8.01
89.	Supervisors, pers. service	10	15	60.00	62.26	8.04
90.	Cementing/gluing mach. ops.	16	22	57.89	62.33	8.07
91.	Pers. service occ., N.E.C.	22	30	57.69	62.43	8.12
92.	Personnel, training, and labor-relations specialists	132	164	55.41	62.98	8.43
93.	Pkging/filling mach. ops.	166	203	55.01	63.66	8.81
94.	Optical goods workers	22	25	53.19	63.74	8.86
95.	Expediters	48	53	52.48	63.92	8.97
96.	Counselors, educ. and voc.	77	83	51.87	64.20	9.15
97.	Photo. process machine ops.	36	38	51.35	64.32	9.23
98.	Production inspectors, checkers, and examiners	332	345	50.96	65.48	9.99
99.	Mail clerks, ex. postal serv.	67	68	50.37	65.71	10.15
100.	Cooks, except short order	395	397	50.13	67.03	11.06
101.	Sales workers, shoes	22	22	50.00	67.11	11.11
102.	Food batchmakers	13	13	50.00	67.15	11.14
103.	Animal caretakers, exc. farm	20	20	50.00	67.22	11.18
104.	Production coordinators	90	89	49.72	67.51	11.39
105.	Teachers, N.E.C.	80	79	49.69	67.78	11.57
106.	Misc. textile machine ops.	35	34	49.28	67.89	11.65
107.	Street/door-to-door venders	33	32	49.23	68.00	11.73
108.	Real-estate sales	135	130	49.06	68.43	12.04
109.	Secondary school teachers	544	523	49.02	70.18	13.29
110.	Bookbinders	17	16	48.48	70.23	13.33
111.	Misc. printing machine ops.	16	15	48.39	70.28	13.37
112.	Psychologists	43	40	48.19	70.42	13.47
113.	Underwriters/other financial officers	279	258	48.04	71.28	14.11
114.	Bartenders	97	89	47.85	71.58	14.33
115.	Public-relations specialists	66	58	46.77	71.77	14.48
116.	Personnel/labor-relations managers	56	49	46.67	71.94	14.61
117.	Misc. food-prep. occs.	135	118	46.64	72.33	14.92
118.	Weighers, measurers, and checkers	30	26	46.43	72.42	14.99
119.	Biological technicians	25	21	45.65	72.49	15.05
120.	Managers, properties and real estate	102	85	45.45	72.77	15.28
121.	Editors and reporters	96	80	45.45	73.04	15.50
122.	Sales workers, furniture etc.	53	44	45.36	73.19	15.62
123.	Dispatchers	86	69	44.52	73.42	15.82
124.	Short-order cooks	20	16	44.44	73.47	15.87
125.	Economists	58	46	44.23	73.62	16.00

126.	Sales, other business serv.	187	146	43.84	74.11	16.43
127.	Attendants, amusement, and recreation facilities	35	27	43.55	74.20	16.51
128.	Assemblers	555	422	43.19	75.61	17.79
129.	Medical scientists	16	12	42.86	75.65	17.83
130.	Advertising and rela. sales	59	44	42.72	75.80	17.96
131.	Postmasters and mail superintendents	15	11	42.31	75.84	18.00
132.	Buyers, wholesale and retail trade, ex. farm prod.	89	65	42.21	76.05	18.20
133.	Misc. hand working occs.	18	13	41.94	76.10	18.24
134.	Accountants and auditors	620	443	41.67	77.58	19.67
135.	Molding/casting machine ops.	53	36	40.45	77.70	19.79
136.	Technical writers	27	18	40.00	77.76	19.85
137.	Dental lab. and med. appliance technicians	21	14	40.00	77.81	19.90
138.	Painters, sculptors, craft artists, art printmakers	51	33	39.29	77.92	20.02
139.	Designers	160	102	38.93	78.26	20.39
140.	Officials/admin., public administration	248	158	38.92	78.78	20.96
141.	Statisticians	16	10	38.46	78.82	20.99
142.	Admin., educ./rela. fields	237	147	38.28	79.31	21.54
143.	Supervisors, cleaning and bldg. service	70	42	37.50	79.45	21.70
144.	Purchasing agents/buyers, N.E.C.	137	80	36.87	79.72	22.01
145.	Stock/inventory clerks	291	165	36.18	80.27	22.68
146.	Financial managers	218	123	36.07	80.68	23.18
147.	English teachers	16	9	36.00	80.71	23.22
148.	Waiters/waitresses assts.	68	38	35.85	80.84	23.38
149.	Tailors	18	10	35.71	80.87	23.42
150.	Art/drama/music teachers	19	10	34.48	80.90	23.46
151.	Computer programmers	306	161	34.48	81.44	24.17
152.	Physicians assistants	28	14	33.33	81.49	24.23
153.	Science teachers, N.E.C.	35	17	32.69	81.55	24.31
154.	Postal clerks, ex. mail carriers	164	79	32.51	81.81	24.69
155.	Technicians, N.E.C.	125	60	32.43	82.01	24.98
156.	Barbers	21	10	32.26	82.04	25.02
157.	Business/promotion agents	26	12	31.58	82.08	25.08
158.	Production testers	39	18	31.58	82.14	25.17
159.	Bakers	44	20	31.25	82.21	25.27
160.	Engin. technicians, N.E.C.	124	56	31.11	82.40	25.56
161.	Hand printing, coating, and decorating occupations	20	9	31.03	82.43	25.61
162.	Insurance sales	251	110	30.47	82.80	26.18
163.	Misc. machine ops., N.E.C.	630	274	30.31	83.71	27.63
164.	Management analysts	37	16	30.19	83.77	27.72
165.	Supervisors/proprietors	1,341	570	29.83	85.67	30.80
166.	Computer systems analysts and scientists	201	85	29.72	85.95	31.26
167.	Actors and directors	36	15	29.41	86.00	31.35

168.	Machine ops., not spec.	212	88	29.33	86.30	31.83
169.	Biological/life scientists	41	17	29.31	86.36	31.93
170.	Managers/admin., N.E.C.	2,865	1,180	29.17	90.30	38.52
171.	Operations/systems researchers and analysts	99	39	28.26	90.43	38.74
172.	Machine feeders/offbearers	56	22	28.21	90.50	38.87
173.	Slicing/cutting mach. ops.	118	46	28.05	90.66	39.14
174.	Securities, fin. serv. sales	126	49	28.00	90.82	39.43
175.	Punching/stamping mach. ops.	87	33	27.50	90.93	39.63
176.	Bus drivers	149	56	27.32	91.12	39.98
177.	College/univ. teachers	72	26	26.53	91.21	40.14
178.	Chemical technicians	51	18	26.09	91.27	40.26
179.	Crushing/grinding mach. ops.	40	14	25.93	91.31	40.35
180.	Pharmacists	79	27	25.47	91.40	40.53
181.	Purchasing managers	63	21	25.00	91.47	40.68
182.	Supervisors, computer ops.	27	9	25.00	91.50	40.74
183.	Printing machine ops.	299	96	24.30	91.82	41.43
184.	Traffic, shipping, and receiving clerks	304	92	23.23	92.13	42.13
185.	Lawyers	237	71	23.05	92.37	42.67
186.	Managers, marketing, advertising and pub. relations	259	77	22.92	92.63	43.27
187.	Chemists, ex. biochemists	73	21	22.34	92.70	43.44
188.	Supervisors, distribution, sched., adjusting clerks	115	32	21.77	92.80	43.70
189.	Inspectors/testers/graders	87	24	21.62	92.88	43.90
190.	Stock handlers and baggers	273	74	21.33	93.13	44.53
191.	Messengers	58	15	20.55	93.18	44.66
192.	Janitors and cleaners	1,002	258	20.48	94.04	46.97
193.	Sales workers, hardware and building supplies	109	28	20.44	94.14	47.22
194.	Photographers	51	13	20.31	94.18	47.33
195.	Announcers	20	5	20.00	94.20	47.38
196.	Sales workers, radio, television, hi-fi, appliances	85	21	19.81	94.27	47.58
197.	Inspectors and compliance officers, ex. construction	124	30	19.48	94.37	47.86
198.	Misc. metal-, plastic-, stone-, glassworking mach. ops.	25	6	19.35	94.39	47.92
199.	Physicians	178	42	19.09	94.53	48.33
200.	Correct. instit. officers	132	31	19.02	94.63	48.63
201.	Admin., protect. services	35	8	18.60	94.66	48.71
202.	Drilling/boring mach. ops.	23	5	17.86	94.68	48.76
203.	Musicians and composers	28	6	17.65	94.70	48.83
204.	Laborers, ex. construction	766	163	17.55	95.24	50.59
205.	Upholsterers	33	7	17.50	95.26	50.67
206.	Vehicle washers/equip. cleaners	121	25	17.12	95.35	50.95
207.	Misc. material moving equipment ops.	127	26	16.99	95.43	51.24
208.	Butchers and meat cutters	179	36	16.74	95.55	51.65
209.	Math. science teachers	26	5	16.13	95.57	51.71
210.	Judges	21	4	16.00	95.58	51.76

211.	Painting/paint spraying machine ops.	142	27	15.98	95.67	52.08
212.	Architects	48	9	15.79	95.70	52.19
213.	Sales reps., commodities, ex. retail	1,020	191	15.77	96.34	54.54
214.	Metal plating mach. ops.	27	5	15.63	96.36	54.60
215.	Grinding, abrading, buffing, polishing machine ops.	114	21	15.56	96.43	54.86
216.	Supervisors, motor vehicle ops.	22	4	15.38	96.44	54.91
217.	Mail carriers, post. svc.	194	35	15.28	96.56	55.36
218.	Drafting occupations	245	41	14.34	96.70	55.92
219.	Athletes	30	5	14.29	96.71	55.99
220.	Lathe/turning mach. ops.	72	12	14.29	96.75	56.16
221.	Supervisors, prod. occs.	1,108	182	14.11	97.36	58.71
222.	Meter readers	39	6	13.33	97.38	58.80
223.	Guards/police, ex. public serv.	403	61	13.15	97.59	59.72
224.	Electrical/electron. techn.	219	33	13.10	97.70	60.23
225.	Surveying/mapping techn.	49	7	12.50	97.72	60.34
226.	Production helpers	57	8	12.31	97.75	60.47
227.	Air traffic controllers	23	3	11.54	97.76	60.52
228.	Chemical engineers	49	6	10.91	97.78	60.64
229.	Sheriffs, baliffs, other law enforcement officers	70	8	10.26	97.80	60.80
230.	Photoengravers/lithographers	35	4	10.26	97.82	60.88
231.	Data process. equip. repairers	90	10	10.00	97.85	61.09
232.	Misc. plant/system ops.	27	3	10.00	97.86	61.15
233.	Geologists/geodesists	37	4	9.76	97.87	61.23
234.	Farm workers	610	65	9.63	98.09	62.64
235.	Sales workers, parts	122	12	8.96	98.13	62.92
236.	Supervisors, guards	31	3	8.82	98.14	62.99
237.	Supervisors, mechanics and repairers	223	21	8.61	98.21	63.50
238.	Garage/service-station-related occs.	152	14	8.43	98.26	63.85
239.	Mining machine ops.	33	3	8.33	98.27	63.93
240.	Farm managers	44	4	8.33	98.28	64.03
241.	Telephone installers and repairers	218	19	8.02	98.35	64.53
242.	Mechanical controls and valve repairers	24	2	7.69	98.35	64.58
243.	Industrial engineers	181	15	7.65	98.40	65.00
244.	Sales workers, motor vehicles and boats	195	16	7.58	98.46	65.45
245.	Police/detect., public serv.	382	31	7.51	98.56	66.33
246.	Civil engineers	192	15	7.25	98.61	66.77
247.	Engineering teachers	26	2	7.14	98.62	66.83
248.	Electrical/electron. engin.	436	33	7.04	98.73	67.83
249.	Taxicab drivers/chauffeurs	82	6	6.82	98.75	68.02
250.	Physicists/astronomers	28	2	6.67	98.75	68.08
251.	Supervisors, farm workers	42	3	6.67	98.76	68.18
252.	Truck drivers, light	342	24	6.56	98.84	68.97
253.	Sawing machine operators	72	5	6.49	98.86	69.13

254.	Freight, stock, material, movers, hand, N.E.C.	389	26	6.27	98.95	70.03
255.	Industrial truck and tractor equip. ops.	376	22	5.53	99.02	70.89
256.	Mixing/blending mach. ops.	89	5	5.32	99.04	71.10
257.	Groundskeepers/gardeners except farm	326	18	5.23	99.10	71.85
258.	Telephone line installers and repairers	55	3	5.17	99.11	71.97
259.	Welders and cutters	510	27	5.03	99.20	73.15
260.	Drivers, sales workers	193	10	4.93	99.23	73.59
261.	Misc. electrical/electron. equip. repairers	60	3	4.76	99.24	73.73
262.	Separating, filtering, clarifying mach. ops.	61	3	4.69	99.25	73.87
263.	Mechanical engineers	237	11	4.44	99.29	74.41
264.	Supervisors, police/detec.	65	3	4.41	99.30	74.56
265.	Machinists	478	22	4.40	99.37	75.66
266.	Engineers, N.E.C.	180	8	4.26	99.40	76.08
267.	Clergy	227	10	4.22	99.43	76.60
268.	Sheet metal workers	117	5	4.10	99.45	76.87
269.	Elect. repairers, communic., industrial equip.	121	5	3.97	99.47	77.14
270.	Painters, construc./maint.	226	9	3.83	99.50	77.66
271.	Specified mechanics and repairers, N.E.C.	336	13	3.72	99.54	78.44
272.	Mach. maintenance occs.	26	1	3.70	99.54	78.50
273.	Construction inspectors	54	2	3.57	99.55	78.62
274.	Airplane pilots/navigators	54	2	3.57	99.56	78.75
275.	Glaziers	27	1	3.57	99.56	78.81
276.	Lathe/turn. mach. setup ops.	27	1	3.57	99.56	78.87
277.	Pest control	28	1	3.45	99.57	78.93
278.	Cabinetmakers/bench carpent.	28	1	3.45	99.57	79.00
279.	Forestry/conserv. scientists	29	1	3.33	99.57	79.06
280.	Not spec. mechan./repairers	121	4	3.20	99.59	79.34
281.	Petroleum engineers	31	1	3.13	99.59	79.41
282.	Extruding/forming mach. ops.	31	1	3.13	99.59	79.49
283.	Crane and tower operators	94	3	3.09	99.60	79.70
284.	Supervisors, firefighting	33	1	2.94	99.61	79.78
285.	Supervisors, rela. agric. occs.	66	2	2.94	99.61	79.93
286.	Industrial mach. repairers	506	15	2.88	99.66	81.09
287.	Household appliance and power tool repairers	35	1	2.78	99.67	81.17
288.	Furnace, kiln, and oven operators, ex. food	106	3	2.75	99.68	81.42
289.	Millwrights	86	2	2.27	99.68	81.62
290.	Small-engine repairers	44	1	2.22	99.69	81.72
291.	Construction laborers	565	12	2.08	99.73	83.02
292.	Stationary engineers	97	2	2.02	99.73	83.24
293.	Carpet installers	49	1	2.00	99.74	83.35
294.	Grader/dozer/scraper ops.	99	2	1.98	99.74	83.58
295.	Truck drivers, heavy	1,536	31	1.98	99.85	87.11
296.	Supervisors, extractv. occs.	50	1	1.96	99.85	87.23

297.	Timber cutting/logging occs.	50	1	1.96	99.85	87.34
298.	Office machine repairs	55	1	1.79	99.86	87.47
299.	Construc. trades, N.E.C.	112	2	1.75	99.86	87.73
300.	Auto. body/rela. repairers	128	2	1.54	99.87	88.02
301.	Locomotive operating occs.	64	1	1.54	99.87	88.17
302.	Tool- and diemakers	130	2	1.52	99.88	88.47
303.	Drywall installers	74	1	1.33	99.88	88.64
304.	Carpenters	826	11	1.31	99.92	90.54
305.	Aircraft engine mechanics	84	1	1.18	99.92	90.73
306.	Plumbers, pipefitters and steamfitters	363	4	1.09	99.94	91.56
307.	Electricians	559	6	1.06	99.96	92.85
308.	Automobile mechanics	636	6	.93	99.98	94.31
309.	Operating engineers	127	1	.78	99.98	94.60
310.	Helpers, construc. trades	141	1	.70	99.98	94.93
311.	Supervisors, N.E.C.	318	2	.62	99.99	95.66
312.	Bus, truck, stationary engine mechanics	320	2	.62	100.00	96.40
313.	Heating, air conditioning, and refrigeration mechan.	181	1	.55	100.00	96.81
314.	Aerospace engineers	74	b	c	100.00	96.98
315.	Firefighting occs.	160	b	c	100.00	97.35
316.	Heavy-equip. mechanics	152	b	c	100.00	97.70
317.	Farm equip. mechanics	37	b	c	100.00	97.79
318.	Supervisors, electricians/ power trans. installers	36	b	c	100.00	97.87
319.	Brickmasons and stonemasons	98	b	c	100.00	98.09
320.	Electrical power installers and repairers	103	b	c	100.00	98.33
321.	Plasterers	26	b	c	100.00	98.39
322.	Concrete/terrazzo finishers	68	b	c	100.00	98.55
323.	Insulation workers	49	b	c	100.00	98.66
324.	Roofers	106	b	c	100.00	98.90
325.	Sheet-metal duct installers	29	b	c	100.00	98.97
326.	Structural metal workers	50	b	c	100.00	99.08
327.	Drillers, oil wells	53	b	c	100.00	99.21
328.	Mining occs., N.E.C.	37	b	c	100.00	99.29
329.	Boilermakers	33	b	c	100.00	99.37
330.	Water/sewage treatment ops.	38	b	c	100.00	99.45
331.	Power plant operators	51	b	c	100.00	99.57
332.	Railrd. conduct./yardmstrs.	36	b	c	100.00	99.65
333.	Railrd. brake, signal, and switch operators	48	b	c	100.00	99.77
334.	Excavating/loading mach. ops.	63	b	c	100.00	99.91
335.	Garbage collectors	39	b	c	100.00	100.00

[a] Based on employment in detailed occupations of more than 25,000 workers.
[b] Fewer than 500 workers.
[c] Less than .005.

Source rbara R. Bergmann. The Economic Emergence of Women. (New York: Basic Books, 1986), Appendix I, pp. 317 - 328.

TABLE 2

DISTRIBUTION OF WOMEN AND MEN BY MAJOR OCCUPATIONAL GROUP

	Women		Men	
Occupation	1978	1988	1978	1988
Total	100.0%	100.0%	100.0%	100.0%
Executive, administrative, and managerial	6.3	10.8	12.2	13.6
Professional specialty	12.7	14.4	10.4	11.9
Technical	2.7	3.3	2.5	2.9
Sales	11.5	13.0	10.1	11.1
Administrative support, including clerical	31.1	28.3	5.7	5.7
Precision production, craft and repair	1.9	2.3	20.2	19.7
Operatives, fabricators, and laborers	12.4	8.9	24.5	20.9
Service	19.9	17.9	8.8	9.6
Farming, forestry and fishing	1.5	1.1	5.5	4.5

Sources: U.S. Department of Labor, Bureau of Labor Statistics. Employment and Earnings, January 1989, Table 21; U.S. Department of Labor, Bureau of Labor Statistics. Employment and Earnings, January 1984, pages 13-16.

TABLE 3

INDEX OF SEGREGATION BY OCCUPATIONAL GROUP, 1970 AND 1980

MAJOR OCCUPATIONAL GROUP	1970	1980	Change 1970 - 80
Total Employed	**67.7**	**59.2**	**-8.5**
Managerial and professional specialty	55.5	42.9	-12.6
Technical, sales, and admin. support	63.9	57.8	-6.1
Service occupations	67.6	55.1	-12.5
Farming, forestry, and fishing	38.0	31.0	-7.0
Precision, production, craft, and repair	56.7	53.6	-3.1
Operators, fabricators, and laborers	57.6	52.9	-4.7

Source: U.S. Department of Commerce, Bureau of the Census. Women in the American Economy, by Cynthia M. Taeuber and Victor Valdisera, Current Population Reports, Series P-23, No. 146, 1986, Table 12.

TABLE 4

PERCENT FEMALE IN APPRENTICESHIPS AND EMPLOYMENT FOR SELECTED OCCUPATIONS

	Employment in			
Occupation	1978	1980	1988	1988 Apprentices[a]
Automobile mechanic	.6	.6	.7	2.8
Bricklayer	--	.1	.5	1.6
Carpenter	1.0	1.5	1.5	4.4
Cosmetologist	89.1[b]	88.3[b]	89.5[b]	87.5
Electrician	.8	1.2	1.4	4.1
Machinist	3.1	3.4	4.8	4.9
Painter	5.2	6.0	5.8	8.3
Physical therapist	70.4[c]	73.7	73.5	67.4
Plumber/pipe fitter	.7	.6	.4	2.2[d]
Tool-and-die maker	1.1	2.8	2.4	2.5
Welder	6.0	5.3	4.9	5.6

Notes: [a] For apprentices, data includes 70 percent of national data.

[b] Includes hairdressers.

[c] Includes speech and inhalation therapists.

[d] Women were 3.3 percent of pipe fitter apprentices, 2.2 percent of plumber apprentices.

Sources: U.S. Department of Labor, Bureau of Labor Statistics. Employment and Earnings, January 1979, Table 23, January 1981, Table 23; January 1989, Table 22; U.S. Department of Labor, Bureau of Apprenticeship and Training, unpublished data.

APPENDIX I

ORGANIZATIONS CONTACTED

Community-Based Training and Advocacy Organizations

Access for Women
NYC Technical College
Brooklyn, NY

American Association of
University Women
Washington, DC

Apprenticeship and Nontraditional
Employment for Women (ANEW)
Renton, WA

Building Opportunities Project
Massachusetts Department of
Employment and Training
Boston, MA

Chicago Women in Trades
Chicago, IL

Coal Employment Project
Knoxville, TN

Hard-Hatted Women
Cleveland, OH

NASA Ames Research Center
Moffett Field, CA

Non-traditional Employment for
Women (NEW)
New York, NY

PREP, Inc.
San Francisco, CA

PREP Ohio
Cincinnati, OH

Project WORC
Jersey City State College
Jersey City, NJ

San Leandro Girls Club
San Leandro, CA

Southeast Women's Employment
Coalition
Lexington, KY

Tradeswomen Inc.
San Francisco, CA

Wider Opportunities for Women
(WOW)
Washington, DC

Woman Unlimited
Monmouth, ME

Women Employed Institute
Chicago, IL

Women in the Building Trades
Boston, MA

Women's Development Center
Waukesha City Technical Institute
Pewaukee, WI

Women's Technical Institute
Boston, MA

YWCA Memphis Women in
Trades Project
Memphis, TN

Government Agencies and Research Institutes

The Enhancement Group

Institute for Women's Policy Research

National Academy of Sciences, Committee on Women's Employment and Related Social Issues

National Center of Education and Employment

National Commission for Employment Policy

U.S. Department of Labor, Bureau of Apprenticeship and Training, Employment and Training Administration

U.S. Department of Labor, Women's Bureau

U.S. House of Representatives, Subcommittee on Employment Opportunities

U.S. Senate, Subcommittee on Labor

Wellesley College Center for Research on Women

Unions and Employee Associations

Communication Workers of America

International Union of Electrical, Radio and Machine Workers

Massachusetts Nurses Association

National Education Association

9 to 5: National Association of Working Women

United Brotherhood of Carpenters and Joiners

REFERENCES

Albelda, Randy P. "Occupational Segregation by Race and Gender." Industrial and Labor Relations Review 39(April 1986): 404-411.

Albin, Peter S. and Eileen Applebaum. "Computer Rationalization and the Transformation of Work: Lessons from the Insurance Industry." In Jane Jenson et al., (Eds.), Feminization of the Labor Force. New York: Oxford University Press, 1988.

Becker, Gary S. "Human Capital, Effort, and the Sexual Division of Labor." Journal of Labor Economics 3(January 1985): S33-S58.

Beller, Andrea H. "Trends in Occupational Segregation by Sex and Race, 1960-1981." In Barbara F. Reskin, (Ed.), Sex Segregation in the Workplace. Washington, D.C.: National Academy Press, 1984.

Beller, Andrea H. and Kee-ok Kim Han. "Occupational Sex Segregation: Prospects for the 1980s." In Barbara F. Reskin, (Ed.), Sex Segregation in the Workplace. Washington, D.C.: National Academy Press, 1984.

Bergmann, Barbara R. "The Shibboleth of the Shrinking Pie." Perspectives: Civil Rights Quarterly (Summer-Fall 1981): 30-33.

Bergmann, Barbara R. The Economic Emergence of Women. New York: Basic Books, 1986.

Bergmann, Barbara R. "Does the Market for Women's Labor Need Fixing?" Journal of Economic Perspectives 3(Winter 1989): 43-60.

Berryman, Sue E. Who Will Do Science? New York: Rockefeller Foundation, November 1983.

Berryman, Sue E. and Linda J. Waite. "Young Women's Choice of Nontraditional Occupations." In Christina Boze and Glenna Spitze, (Eds.), Ingredients for Women's Employment Policy. Albany: SUNY Press, 1987.

Bielby, William T. and James N. Baron. "A Woman's Place Is With Other Women: Sex Segregation Within Organizations." In Barbara F. Reskin, (Ed.), Sex Segregation in the Workplace. Washington, D.C.: National Academy Press, 1984.

Bielby, William T. and James N. Baron. "Undoing Discrimination: Job Integration and Comparable Worth." In Christina Boze and Glenna Spitze, (Eds.), Ingredients for Women's Employment Policy. Albany: SUNY Press, 1987.

Blau, Francine D. and Lawrence M. Kahn. "Race and Sex Differences in Quits by Young Workers." Industrial and Labor Relations Review 34(July 1981): 563-77.

Blau, Francine D. and Wallace E. Hendricks. "Occupational Segregation by Sex: Trends and Prospects." Journal of Human Resources 14(Spring 1979): 197-210.

Briggs, Norma. "Overcoming Barriers to Successful Entry and Retention of Women in Traditionally Male Skilled Blue-Collar Trades in Wisconsin." In Vernon B. Briggs and Felician F. Foltman, (Eds.), Apprenticeship Research: Emerging Findings and Future Trends. Ithaca: ILR Publications, 1981.

Brown, Linda Keller. The Woman Manager in the United States: A Research Analysis and Bibliography. Washington, DC: Business and Professional Women's Foundation, 1981.

Burbridge, Lynn C. "Black Women in Employment and Training Programs." In Margaret C. Simms and Julianne M. Malveaux, (Eds.), Slipping Through the Cracks: The Status of Black Women. New Brunswick: Transaction Books, 1987.

Butter, I., E. Carpenter, B. Kay, and R. Simmons. Sex and Status: Hierarchies in the Health Workforce. Washington, DC: American Public Health Association, March 1985.

Carothers, Suzanne C. and Peggy Crull. "Contrasting Sexual Harassment in Female- and Male-dominated Occupations." In Karen Brodkin Sacks and Dorothy Remy, (Eds.), My Troubles Are Going to Have Trouble With Me. New Brunswick: Rutgers University Press, 1984.

Chertos, Cynthia H., Lois Haignere, and Ronnie J. Steinberg. Occupational Segregation and Its Impact on Working Women: A Conference Report. Albany: Center for Women in Government, November 1982.

Cohn, Samuel. The Process of Occupational Sex Typing. Philadelphia: Temple University Press, 1985.

Corcoran, Mary, Greg J. Duncan, and Michael Ponza. "Work Experience, Job Segregation, and Wages." In Barbara F. Reskin, (Ed.), Sex Segregation in the Workplace. Washington, D.C.: National Academy Press, 1984.

Cyert, Richard and David C. Mowery, Eds. Technology and Employment: Innovation and Growth in the U.S. Economy. Washington, DC: National Academy Press, 1987.

Deaux, Kay K. and Joseph C. Ullman. Women of Steel: Female Blue-Collar Workers in the Basic Steel Industry. New York: Praeger, 1983.

Epstein, Cynthia F. Women in Law. New York: Basic Books, 1981.

Figart, Deborah M. Economic Status of Women in the Labor Market and Prospects for Pay Equity Over the Life Cycle. Washington, D.C.: American Association of Retired Persons, 1988.

Flynn, Patricia M. Facilitating Technological Change: The Human Resource Challenge. Cambridge, MA: Ballinger, 1988.

Fulbright, Karen. "The Myth of the Double-Advantage: Black Female Managers." In Margaret C. Simms and Julianne M. Malveaux, (Eds.), Slipping Through the Cracks: The Status of Black Women. New Brunswick: Transaction Books, 1987.

Gaines-Carter, Patrice. "Breaking Tradition: A Look at Opportunities for Women in Blue Collar Jobs." Essence April 1984, p. 30.

General Accounting Office. Advances in Automation Prompt Concern Over Increased U.S. Unemployment. GAO/AFMD-82-44. Washington, D.C.: author, May 25, 1982.

Green, Susan S. "Silicon Valley's Women Workers: A Theoretical Analysis of Sex-Segregation in the Electronics Industry Labor Market." In June Nash and Maria Patricia Fernandez-Kelly (Eds.), Women, Men, and the International Division of Labor. Albany: SUNY Press, 1983.

Gruber, James E. and Lars Bjorn. "Blue-Collar Blues: The Sexual Harassment of Women Auto Workers." Work and Occupations 9(August 1982): 271-298.

Hacker, Sally L. "Sex Stratification, Technology and Organizational Change: A Longitudinal Case Study of AT&T." Social Problems 26(June 1979): 539-557.

Harlan, Anne and Carol L. Weiss. "Sex Differences in Factors Affecting Managerial Career Advancement." In Phyllis A. Wallace, (Ed.), Women and the Workplace. Boston: Auburn House, 1982.

Harlan, Sharon and Edward J. Hackett. Federal Job Training Programs and Employment Outcomes: Effects by Sex and Race of Participants. Working Paper No. 129. Wellesley, MA: Wellesley College Center for Research on Women, 1984.

Harlan, Sharon L. and Brigid O'Farrell. "After the Pioneers: Prospects for Women in Nontraditional Blue-Collar Work." Work and Occupations 9(August 1982): 363-386.

Hartmann, Heidi. "Capitalism, Patriarchy, and Job Segregation by Sex." In Elizabeth Abel and Emily K. Abel, (Eds.), The Signs Reader: Women, Gender and Scholarship. Chicago: University of Chicago Press, 1983.

Hartmann, Heidi I., Robert E. Kraut, and Louise A. Tilly, (Eds.). Computer Chips and Paper Clips, Volume I. Washington, D.C.: National Academy Press, 1986.

Holden, Karen C. and W. Lee Hansen. "Part-Time Work, Full-Time Work, and Occupational Segregation." In Clair Brown and Joseph A. Pechman, (Eds.), Gender in the Workplace. Washington, D.C.: The Brookings Institution, 1987.

Hunt, H. Allan and Timothy L. Hunt. Clerical Employment and Technological Change: A Review of Recent Trends and Projections. Report No. 86-14. Washington, DC: National Commission for Employment Policy, February 1986.

Hymowitz, Carol. "One Firm's Bid to Keep Blacks, Women." Wall Street Journal, February 16, 1989, p. B1.

Johnson, Wendy. "Women in Road Construction." In Sara E. Rix, (Ed.), The American Woman 1988-89: A Status Report. New York: W.W. Norton, 1988.

Kane, Roslyn D. and Jill Miller. "Women and Apprenticeship: A Study of Programs Designed to Facilitate Women's Participation in the Skilled Trades." In Briggs and Foltman, (Ed.), Apprenticeship Research: Emerging Findings and Future Trends. Ithaca: ILR Publications, Cornell, 1981.

Kanter, Rosabeth M. Men and Women of the Corporation. New York, Basic Books, 1977.

Kaplan, Christine E. Bridging the Skills Gap: Working Paper. (Volumes I and II) Washington, DC: Wider Opportunities for Women, 1984.

Katz, Naomi and David S. Kemnitzer. "Women and Work in Silicon Valley: Options and Futures." In Karen Brodkin Sachs and Dorothy Remy, (Eds.), My Troubles Are Going to Have Trouble with Me. New Brunswick: Rutgers University Press, 1984.

Kelley, Maryellen R. "Discrimination in Seniority Systems: A Case Study." Industrial and Labor Relations Review 36(October 1982): 40-54.

Kight, Betsy, Courtney Petersen, and Joyce M. Munns. Sex Equity in Maryland Employment and Training Programs. Baltimore: Maryland Institute for Policy Analysis and Research, March 1988.

Klein, Deborah Pisetzner. "Occupational Employment Statistics for 1972-82." Employment and Earnings 31(January 1984): 13-16.

Lappe, Lothar. "The Advance of Microelectronics in Assembly Operations: New Opportunities for Working Women?" In Agneta Olerup, Leslie Schneider, and Elsbeth Monod, (Eds.), Women, Work and Computerization: Opportunities and Disadvantages. Amsterdam, Netherlands: North-Holland, 1985.

Lederer, Muriel. Blue-Collar Jobs for Women. New York, N.Y.: E.P. Dutton, 1979.

Lembright, Muriel F. and Jeffrey W. Reimer. "Women Truckers' Problems and the Impact of Sponsorship." Work and Occupations 9(November 1982): 457-474.

Leontief, Wassily and Faye Duchin. The Future Impact of Automation on Workers. New York: Oxford University Press, 1986.

Lillydahl, Jane H. "Women and Traditionally Male Blue-Collar Jobs." Work and Occupations 13(August 1986): 307-323.

Lyson, Thomas A. "Sex Differences in the Choice of a Male or Female Career Line." Work and Occupations 11(May 1984): 131-146.

Malveaux, Julianne M. "Moving Forward, Standing Still: Women in White Collar Jobs." In Phyllis A. Wallace, (Ed.), Women and the Workplace. Boston: Auburn House, 1982.

Malveaux, Julianne and Phyllis Wallace. "Minority Women in the Workplace." In Working Women: Past, Present, Future. Washington, DC: Bureau of National Affairs, 1987.

Marini, Margaret Mooney and Mary C. Brinton. "Sex Typing in Occupational Socialization." In Barbara F. Reskin, (Ed.), Sex Segregation in the Workplace. Washington, D.C.: National Academy Press, 1984.

Martin, Molly, (Ed.). Hard-Hatted Women: Stories of Struggle and Success in the Trades. Seattle: The Seal Press, 1988.

Martin, Susan E. "Think Like a Man, Work Like a Dog, and Act Like a Lady: Occupational Dilemmas of Policewomen." In Anne Statham, Eleanor M. Miller, and Hans O. Mauksch, (Eds.), The Worth of Women's Work: A Qualitative Synthesis. Albany: SUNY Press, 1988.

McCullough, Crisco Skidmore and Sara J. Tuttle. Follow-Up Study of Non-Traditional Students: Women in Technical Training and Occupations. San Francisco: Community College Centers, January 1988.

Moore, Helen A. and Jane C. Ollenburger. "What Sex Is Your Parachute?" Work and Occupations 13(November 1986): 511-531.

National Coalition for Women and Girls in Education. Working Toward Equity: A Report On Implementation of The Sex Equity Provisions of the Carl D. Perkins Vocational Education Act. Washington, DC: Author, April 1988.

National Commission for Employment Policy. Computers in the Workplace: Selected Issues. Report No. 19. Washington, DC: Author, March 1986.

National Science Foundation. Women and Minorities in Science and Engineering. Washington, DC: Author, January 1988.

9-to-5, National Association of Working Women. Hidden Victims: Clerical Workers, Automation, and The Changing Economy. Cleveland: 9-to-5, September 1985.

Noyelle, Thierry J. "The New Technology and the New Economy: Some Implications for Equal Employment Opportunity." In Heidi I. Hartmann, (Ed.), Computer Chips and Paper Clips, Volume II. Washington, D.C.: National Academy Press, 1987.

O'Farrell, Brigid. *Women and Blue Collar Work*. Working Paper No. 20. Wellesley, MA: Wellesley College Center for Research on Women, 1978.

O'Farrell, Brigid. "Response." In Briggs and Foltman, (Eds.), *Apprenticeship Research: Emerging Findings and Future Trends*. Ithaca: ILR Publications, Cornell, 1981.

O'Farrell, Brigid. "Women in Blue-Collar Occupations: Traditional and Nontraditional." In Ann Stromberg and Shirley Harkess, (Eds.), *Women Working: Theories and Facts in Perspective*. Mountain View, CA: Mayfield Publishing Company, 1988.

O'Farrell, Brigid and Sharon Harlan. *Craftsworkers and Clerks: The Effect of Male Coworker Hostility on Women's Satisfaction with Nontraditional Jobs*. Working Paper No. 62. Wellesley, MA: Wellesley College Center for Research on Women, 1980.

O'Farrell, Brigid and Sharon L. Harlan. "Job Integration Strategies: Today's Programs and Tomorrow's Needs." In Barbara F. Reskin, (Ed.), *Sex Segregation in the Workplace*. Washington, D.C.: National Academy Press, 1984.

Office of Technology Assessment, *Computerized Manufacturing Automation: Employment, Education and the Workplace*. Washington, D.C.: U.S. Congress OTA-CIT-235, April 1984.

Olerup, A., L. Schneider, B. Carlsson, and I. Larsson. "Women, Work and Computerization: A Conference Report." In Agneta Olerup, Leslie Schneider, and Elsbeth Monod, (Eds.), *Women, Work and Computerization: Opportunities and Disadvantages*. Amsterdam, Netherlands: North-Holland, 1985.

Parrish, John B. "Are Women Taking Over the Professions?" Challenge January/February 1986, pp. 54-58.

Phipps, Polly A. Sex Segregation and the Changing Sex Composition of Insurance Adjusters and Examiners. Unpublished doctoral dissertation, University of Michigan, 1989.

Polachek, Solomon W. "Occupational Self-Selection: A Human Capital Approach to Sex Differences in Occupational Structure," Review of Economics and Statistics 58(February 1981): 60-69.

Powers, Karen Jane. "Building Skills From the Ground Up." Ms. May 1986, p. 39.

Reskin, Barbara F. "Bringing the Men Back In: Sex Differentiation and the Devaluation of Women's Work," Gender and Society 2(March 1988): 58-81.

Reskin, Barbara F. and Heidi I. Hartmann, (Eds.). Women's Work, Men's Work: Sex Segregation on the Job. Washington, D.C.: National Academy Press, 1986.

Reskin, Barbara F. and Polly A. Phipps. "Women in Male-dominated Professional and Managerial Occupations." In Ann Stromberg and Shirley Harkess, (Eds.), Women Working: Theories and Facts in Perspective. Mountain View, CA: Mayfield Publishing Company, 1988.

Reskin, Barbara F. and Patricia A. Roos. "Status Hierarchies and Sex Segregation." In Christine Bose and Glenna Spitze, (Eds.), Ingredients for Women's Employment Policy. Albany: SUNY Press, 1987.

Reskin, Barbara F. and Patricia A. Roos. Job Queues, Gender Queues: Women's Movement into Male Occupations. Philadelphia: Temple University Press, forthcoming.

Rosenfeld, Rachel A. "Job Changing and Occupational Sex Segregation." In Barbara F. Reskin, (Ed.), Sex Segregation in the Workplace. Washington, D.C.: National Academy Press, 1984.

Roos, Patricia A. and Barbara F. Reskin. "Institutional Factors Contributing to Sex Segregation in the Workplace." In Barbara F. Reskin, (Ed.), Sex Segregation in the Workplace. Washington, D.C.: National Academy Press, 1987.

Ruggiero, Josephine A. and Louise C. Weston. "Work Options for Women in Women's Magazines: The Medium and the Message." Sex Roles 12(May/June 1985).

Sandell, Steven H. Who is Served in JTPA Programs: Patterns of Participation and Intergroup Equity. Report No. RR-88-03. Washington, DC: National Commission for Employment Policy, February 1988.

Sanders, Jo. Staying Poor: How the Job Training Partnership Act Fails Women. Metuchen, NJ: Scarecrow Press, 1988.

Schreiber, Carol T. Men and Women in Transitional Occupations. Cambridge, MA: MIT Press, 1979.

Schroedel, Jean R. Alone in a Crowd: Women in the Trades Tell Their Stories. Philadelphia, PA: Temple University Press, 1985.

Shaeffer, Ruth G. and Edith F. Lynton. "Corporate Experiences in Improving Women's Job Opportunities." In Phyllis A. Wallace, (Ed.), Women and the Workplace. Boston: Auburn House, 1982.

Silvestri, George T. and John M. Lukasiewicz. "A Look at Occupational Employment Trends to the Year 2000. " Monthly Labor Review 110(September 1987): 46-63.

Sokoloff, Natalie J. "The Increase of Black and White Women in the Professions: A Contradictory Analysis." In Christina Bose and Glenna Spitze, (Eds.), Ingredients for Women's Employment Policy. Albany: SUNY Press, 1987.

Solow, Katherine. "The Job Training Partnership Act: Service to Women." New York: Grinker, Walker & Associates, 1986.

Stanwick Associates. Women in Construction: Moving Women into New Jersey's Roadbuilding Industry. Metuchen, NJ: Author, February 1988.

Steinberg, Ronnie and Alice Cook. Women, Unions, and Equal Employment Opportunity. Working Paper 3. Albany: Center for Women in Government, January 1981.

Streker-Seeborg, Irmtraud, et al. "The Impact of Nontraditional Training on the Occupational Attainment of Women." Journal of Human Resources 12(Fall 1984): 452-471.

Strober, Myra H. "The MBA: Same Passport to Success for Women and Men?" In Phyllis A. Wallace, (Ed.), Women in the Workplace. Boston: Auburn House, 1982.

Strober, Myra H. and Carolyn L. Arnold. "Integrated Circuits/Segregated Labor: Women in Computer-Related Occupations and High-Tech Industries." In Heidi I. Hartmann, (Ed.), Computer Chips and Paper Clips. Washington, D.C.: National Academy Press, 1987.

Tienda, Marta and Vilma Ortiz. "Intraindustry Occupational Recomposition and Gender Inequality in Earnings." In Christina Bose and Glenn Spitze, (Eds.), Ingredients for Women's Employment Policy. Albany: SUNY Press, 1987.

Treiman, Donald J. and Heidi I. Hartmann, (Eds.). Women, Work, and Wages: Equal Pay for Jobs of Equal Value. Washington, DC: National Academy Press, 1981.

U.S. Department of Commerce, Bureau of the Census. Women in the American Economy by Cynthia M. Taeuber and Victor Valdisera. Current Population Reports, Series P-23, No. 146, 1986.

U.S. Department of Labor, Bureau of Labor Statistics. Employment and Earnings 28(January 1981), Tables 20, 21.

U.S. Department of Labor, Bureau of Labor Statistics. Unpublished Tabulations from the Current Population Survey, Table A-26, 1987.

U.S. Department of Labor, Bureau of Labor Statistics. Employment and Earnings 36(January 1989), Tables 1, 21, 22.

U.S. Department of Labor, Office of Strategic Planning and Policy Development. Summary of JTQS Data for JTPA Title IIA and III Enrollments and Terminations During PY1987, December 1988.

U.S. Department of Labor, Women's Bureau. Women and Office Automation: Issues for the Decade Ahead. Washington, DC: U.S. Government Printing Office, 1985.

U.S. House of Representatives. Affirmative Action. Joint Oversight Hearings Before the Subcommittee on Civil and Constitutional Rights of the Committee on the Judiciary and the Subcommittee on Employment Opportunities of the Committee on Education and Labor. July 10 and 11, 1985. Serial No. 34 and No. 99-25. Washington, DC: U.S. Government Printing Office, 1986.

U.S. House of Representatives. Oversight Review of the Department of Labor's Office of Federal Contract Compliance Programs and Affirmative Action Programs. Hearings Before the Subcommittee on Employment Opportunities, Committee on Education and Labor. September 18, 1985. Serial No. 99-62. Washington, DC: U.S. Government Printing Office, 1986.

U.S. House of Representatives. Women in the Work Force: Supreme Court Issues. Hearings Before the Subcommittee on Employment Opportunities of the Committee on Education and Labor. September 30, 1986. Serial No. 99-135. Washington, DC: U.S. Government Printing Office, 1986.

U.S. Senate. Women in the Nontraditional Workforce. Hearings Before the Subcommittee on Labor of the Committee on Labor and Human Resources. November 17, 1987. Washington, DC: U.S. Government Printing Office, 1988.

Viscusi, W. Kip. "Sex Differences in Quitting." Review of Economics and Statistics. 62(August 1980): 388-398.

Waite, Linda J. and Sue E. Berryman. Women in Nontraditional Occupations: Choice and Turnover. R-3106-FF. Santa Monica, CA: The RAND Corporation, March 1985.

Waite, Linda J. and Sue E. Berryman. "Occupational Desegregation in CETA Programs." In Barbara F. Reskin, (Ed.), Sex Segregation in the Workplace. Washington, D.C.: National Academy Press, 1987.

Walshok, Mary L. Blue Collar Women: Pioneers on the Male Frontier. Garden City, NY: Anchor Books/Doubleday, 1981.

Werneke, Diane. Microelectronics and Office Jobs: The Impact of the Chip on Women's Employment. Geneva: ILO, 1983.

Werneke, Diane. Microelectronics and Working Women: A Literature Summary, Washington, D.C.: National Academy Press, 1984.

Wider Opportunities for Women. Equity in the Midwest: A Report on the Implementation of Sex Equity in Vocational Education in Illinois, Indiana, and Wisconsin. Washington, DC: Author, November 1988.

Wilkinson, Susann. "The Problems of Women Oil Workers." Social Policy (1984): 27-29.

Women Employed Institute. Occupational Segregation: Understanding the Economic Crisis for Women. Chicago: Women Employed Institute, 1988.

Woody, Bette and Michelene Malson. In Crisis: Low Income Black Unemployed Women in the U.S. Workplace. Working Paper No. 131. Wellesley, MA: Center for Research on Women, 1984.

27. IMPACT OF CHILD CARE ON THE BOTTOM-LINE

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The Conference Board

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27. IMPACT OF CHILD CARE ON THE BOTTOM LINE

Dana E. Friedman
The Conference Board

> "Employers have a major role in helping parents find needed child care, but I do not support give-aways of taxpayer dollars to get business to recognize what it already knows: that it must provide assistance for more and better child care. Workers demand it; productivity demands it; a business bottom-line demands it."
>
> George Bush, 1988

This quote indicates that public policy is about to be shaped by the belief that companies get a return on their investments in child care. There seems to be a growing perception within government and business that what's good for the family is good for business.

Some of this perception is based on the common sense belief that those with fewer problems at home will be better workers. Some believe because they work in companies that have already responded to the child care needs of their employees. Others believe in the bottom-line effects of child care based on research. Whether based on beliefs or data, this link is necessary before senior management will consider providing child care support.

There is limited research available to substantiate the effects of child care problems and programs. With numerous methodological problems, it would be easy for an unsympathetic manager -- a skeptic of company involvement in family issues--to poke holes in the findings. It is almost impossible to prove a cause and effect relationship between various child care supports and productivity. There are so many other factors that affect work behavior. The examination of child care factors must be seen in context.

Bearing in mind the methodological flaws and the broader influences on overall work performance, this paper now reviews the available research on child care and its workplace effects. Although conclusions from the research are modest, they offer the richest opportunity to question our basic definitions of productivity, stress, corporate culture, and work-family conflict. Although the research may pose more questions than answers, there is a consistency to the findings that suggests patterns in the definitions of problems and the effects of work-family solutions. The work-family nexus is very complex, and so is the research on it.

From the attempts to research it, there are many insights to be gleaned. This paper explores some of those insights. They may be related to the way in which productivity is negatively affected by unmet child care problems and the way it might be positively affected by company efforts to solve those problems. The research on the effects of child care problems is much stronger than the research on the effects of child care programs. For instance, we know much more about how often parents are absent due to sick children, than we do about how a child care center might affect absenteeism.

Very few companies have evaluated their child care initiatives. Companies seem more interested in research that helps them decide whether to pursue a child care response than in how to select and implement an effective response. The research that does exist in this latter category is where the methodology is flawed. But because the purpose of the research is to convince the skeptics and not instruct those who plan to implement, companies seem satisfied with the limited findings.

This paper will focus on the research relating child care problems to their effects on absenteeism and tardiness. This research is based largely on the results of needs assessments that companies have conducted in order to determine the prevalence and nature of family problems among employees. (The research on turnover and productivity is more relevant to other work-family problems and will not be reviewed in this paper.) Next will come a review of findings from studies on the effects of sponsoring a child care center.

The Importance of Researching Bottom-Line Effects

Less than 10 percent of large employers or less than 1 percent of all employers provide any form of child care support. The estimated 4,000 employers with child care policies or programs represent dramatic growth during the past five years, and the numbers are expected to increase in the future. However, the vast majority of employers have not responded. Some of the inaction is due to the lack of clear -- or well-publicized -- evidence that child care problems or programs affect the bottom-line.

Companies today wish to aviod losses of time or talent in view of an increased concern about productivity. In a time of labor shortages, economic growth may depend on getting more from each employee, since there will be fewer of them. Workforce growth during the next 15 years at least, will be provided by women. About 80 percent of these women are in their childbearing years and most will get pregnant at some point in their careers. Slightly more than half (51 percent) will return to work within one year of giving birth (O'Connell and Bloom, 1987). And last, but not least, a growing number of employees will need to provide care for their aging parents or in-laws (Opinion Research Corporation, 1988).

Workforce 2000, a Hudson Institute report commissioned by the U.S. Department of Labor concluded that while progress has been made, women still tend to be channeled into traditional female-stereotyped occupations. Adequate child care is still not generally available, and rigid work schedules continue to act as barriers to greater utility of working women (1987; p. xx).

Though women traditionally bear primary responsibility for family care, 60 percent of men have working wives, and an increasing number are taking on more family responsibilities. Research also suggests that when men take on such burdens, they are not immune to their negative effects (Burden & Googins, 1987).

Since the rationale for involvement in family supports is based on the link to productivity, how do family responsibilities affect work behavior? What does a company lose by not responding? And what do they save by providing a response?

The Effects of Work-Family Problems on the Bottom-Line

The relationship between family and work -- in both its negative and positive forms -- is dynamic. It is not just that families affect work or that work affects family. It is that both families and work are changing and each alteration affects the relationship between the two. It is the constancy, intensity and rapidity of change that make the work-family nexus so dynamic.

Work-family relationships will change over time. There will be different problems at different stages of life and at different levels of job responsibility. The sources of conflict will differ, as will their impact. This section looks at the various sources of work-family conflict and then examines the specific effects of unresolved child care problems.

With whatever we learn about effects on the bottom-line, it is important to realize that the family will bear a greater burden of work-family conflict than will work. The Fortune study found that both men and women were likely to report that their jobs interfered with their families. (32 percent of men and 41 percent of women). But only 16 percent of men and 18 percent of women felt that family interfered with their jobs (Galinsky and Hughes, 1987). Similarly, Fernandez (1986) found that 39 percent of women and 13 percent of men reported stress on the job due to their dual roles at work and home. However, 43 percent of women and 22 percent of men felt their dual roles created stress at home. In the study at Merck & Co., 18 percent of men and 21 percent of women reported that their families interfered with their jobs as opposed to 37 percent of the men and 41 percent of the women who said that their jobs interfered with their family (See Table 1).

One study found that 59 percent of employees rated their "family performance" good or unusually good versus 86 percent who gave a good rating to their job performance. The study concludes, "The balance is not even and the job takes priority" (Emlen, 1987).

The Level of Work-Family Conflict

Despite the numbers of employees who do report that their work and family lives are in conflict, substantial numbers of workers do not report such conflict. In a study of 20 hospitals in the Sisters of Providence network in the Pacific Northwest, on average, two-thirds to three-fourths of the work force does not perceive difficulty combining work and family responsibilities. The difficulty is three to six times higher among those employees who have child care or elder care responsibilities. In addition, the study concludes that, "the perceived difficulty in combining work and family...by no means encompasses or exhausts the kinds of difficulties or stresses that arise within either role. There are other issues -- other than the balancing act itself -- that are perceived to be of greater specific concern to employees, such as job stress on the one hand and difficulty finding child care on the other." (Emlen, 1987).

In eight company needs assessments, the percent of employees reporting work-family conflict ranged from 23 to 64 percent. Five of the eight companies had more than 50 percent of employees reporting some work-family conflict. Exempt employees report a slightly higher amount of conflict than the non-exempt. Women report more conflict than men, and parents report more conflict than nonparents.

Sources of Work-Family Conflict

There are numerous sources of work-family conflict. The work sphere creates some, and others begin at home. The following list separates the job and family factors that may result in conflict as concluded from various studies.

A. The job leads to work-family conflict when the employee:

- works long hours;
- has a burdensome schedule involving overtime, weekend work, travel demands or some shift work;
- has little control over the hours worked;
- has little autonomy in the job;
- is very absorbed in the job;
- has no job security;
- changes jobs either due to promotion, layoff or relocation;
- has a more physically or mentally demanding job;
- has a negative social climate at work;
- has unsupportive co-workers;
- has an insensitive supervisor;
- has inflexible work policies.

B. Families lead to work-family conflict when the employee:

- has a disapproving spouse;
- has inequities in his/her marriage;
- has an unequal division of home labor;
- has children, especially preschoolers;
- has had unstable child care arrangements;
- has elder care responsibilities, especially when provided at a distance.

Many work-family conflicts lead to stress. They relate to the way in which one role affects performance in the other. Often called "negative spillover" by researchers (Evans and Bartolome, 1979; Crouter, 1984), it can affect concentration on the job and, ultimately, productivity. Additionally, severe stress can lead to absence.

Another set of work-family conflicts is derived from time demands -- either the number of hours that work and family responsibilities require, or scheduling problems, where it becomes physically impossible to be in two places at the same time. Absence or productivity loss may result. Burden and Googins found that married mothers spend approximately 85 hours per week on work, household chores, and child care. Married fathers spend 66 hours per week on these tasks. Single mothers spend about 75 hours per week on home, work, and kids. (It is not clear why having a husband adds 10 hours to a woman's workload.)

For many employees, particularly women, the combining of work and family responsibilities amounts to almost two full-time jobs. It is not surprising that these workers require different accommodations than the typical, male breadwinner of the past.

Surprisingly, corporate America has been able to absorb women into the work force over the past 20 years without making many changes in their benefits, work schedules or productivity incentives. Policies are also out of synch with the men who are becoming increasingly involved in childrearing. Most other institutions, such as schools and government agencies, have not accommodated the needs of working parents either. As a result, stress, scheduling and time conflicts plague a growing number of workers.

Nowhere is this more evident than in the research on absenteeism related to child care problems.

The Effects of Child Care Problems

Parents may have difficulty getting to work when their children are ill or when their child care breaks down. Parents unable to find or afford high quality child care may experience more breakdown and more absences.

About two-thirds of women and two-fifths of men with preschoolers miss between one and five days per year due to family concerns. In a three-company study of about 1,000 employees in New Jersey, 49 percent of women and 27 percent of men missed work at least once because of child care problems. About twice as many women as men miss work due to child care problems (Galinsky, 1987a).

Among five companies, the average number of days per year that working mothers report absences is 1.5 days. For fathers, the number of days missed is .6. In a study at the Adolph Coors Company, 55 employees missed an average of 2.6 days within a six month period. Cumulatively, these parents missed 230 days due to child care problems, or 460 days per year. The reasons for these absences break down as follows:

146 days (63 percent) due to sick children;
65 days (28 percent) due to the search for child care;
19 days (8 percent) due to breakdown in child care.

Each of these three child care reasons for absence are explored below.

Sick Children. Children under the age of 12 get sick an average of five days per year. Fifty-seven percent of the respondents to the Fortune study said that finding care for a sick child was a big problem. Fernandez (1986) found that sick child care was at the top of a list of 15 possible child care problems (p. 20). The problem was bigger for women than men, where 45 percent of women and 17 percent of men indicated that providing care for a sick child was at least somewhat of a problem. In the Burden-Googins study (1987), women employees were twice as likely as men to have to stay home with a sick child (65 percent compared to 32 percent).

Whether a parent will stay home with a sick child depends on the nature of the illness, the availability of back-up support, the policies of the company, and the personal inclinations of the parent.

Some parents feel they should be with a sick child. In a study at Manville Corporation, among 17 percent of employees who had lost time from work due to sick children, 65 percent gave the reason of not wanting to leave the child home alone. Another 25 percent didn't know a provider, and 22 percent couldn't afford one. The value that one places on certain family relationships and responsibilities will affect job motivation and, ultimately, the employee's desire to go to work.

Finding Child Care. There are three basic problems associated with finding child care. First, there may not be an adequate supply of the care being sought. This is common among those looking for infant care, after-school care, sick child care, and part-time care or care during odd hours. The second problem associated with finding child care is that the care may be too expensive, so that the search must continue until affordable care is found. Third, what does exist is sometimes hard to find. As a result of these problems, the search is often time consuming, frustrating and may not result in satisfactory arrangements. The *Fortune* study revealed that parents who had problems finding child care were more likely to be absent.

Emlen found that employed mothers with children under age 12 who report difficulty finding child care are twice as likely to make arrangements with which they are dissatisfied, twice as likely to report worry or stress about child care, twice as likely to say that combining work and family responsibilities is difficult, and many times, almost invariably, more likely to feel that child care is difficult to continue or maintain. These difficulties reach the work place in the form of time lost and stress (Emlen, 1987, p. 92).

Paying for Quality Child Care: In many communities, finding quality child care is difficult because very little exists or because what exists is too expensive. As Arthur Emlen concluded in his 33-company study in Oregon, "Employees with child care affordability problems have less money and are frustrated in their expectations. They are willing to pay more for child care, but what they are looking for is harder to find, and they end up less satisfied with what they do find" (p. 54).

Some parents benefit from having relatives provide care. Several national studies indicate that about 40 percent of parents rely on relatives. In the Sisters of Providence study, 40 percent of fathers and 20 percent of mothers did not pay for child care. Of whose who did, 13 percent of fathers and 27 percent of mothers said it was very difficult.

The national estimates of the average annual cost of child care run between $2,000 and $3,000 (Hofferth, 1989). Family income often determines child care expenses. In actual dollars, two-paycheck families pay the most for child care, but after controlling for family income and other demographic factors, single mothers pay the most (Shinn, et. al., 1988).

Sustaining Child Care Arrangements. There are many reasons why a parent is forced into a last minute scramble to find new child care arrangements. Child care breakdowns are likely to occur when the care is unreliable or when there is one caregiver, such as in family day care or in-home care, who has become incapacitated. The back-up arrangements that parents make largely determine whether the breakdown will result in an absence. Unreliable care can be a function of several things: the number of arrangements that parents use to cover their work hours; the form of care; and the quality of the care, which is by and large an issue of affordability.

The other source of absence resulting from breakdown may be related to the stress that a breakdown in care causes. The Fortune Magazine survey found that a third of parents who experienced child care breakdowns were nervous or frequently stressed, as compared to 17 percent of those who did not have trouble maintaining their child care arrangements.

The absence need not be for a full day. Parents whose child care had broken down were more likely to come to work late or leave early. About 39 percent of parents had come to work late or left early, with 20 percent doing so three or more times. Of those who missed part of the work day, 72 percent had done so because of family obligations (Fortune). In a survey at a large insurance company in the mid-west almost half of parents had been late or left early at least five times due to child care breakdowns.

The number of days that employees arrived late or left early due to family obligations averaged about 1.8 days per employee per six months. Women have twice as many latenesses or early departures as men (women average 2.4 days among five companies; the men averaged 1.2 days).

The Fortune study also found that 40 percent of parents had experienced a breakdown in child care within the previous three months. The three-company study in New Jersey found 63 percent of parents with recent breakdowns, with 22 percent having had three or more. The Oregon companies found only 10 percent of parents having recently changed their child care arrangement - women twice as likely as men.

The number of breakdowns varied among the four companies for which data were available. The average number of breakdowns reported by women was 2.9, for men the number was 2.4. In two companies, exempt men and women had more breakdowns than non-exempt employees.

Home care is associated with the least disruption of work. Out-of-home child care is associated with being late, leaving early and missing days. The greatest number of interruptions results from children looking after themselves (Emlen).

Absence resulting from child care breakdowns was less frequent among parents with higher incomes and other children. Although child care broke down with equal frequency for employed fathers whose wives worked and for employed mothers who husbands worked, the women were twice as likely to miss work as a result. Among working mothers, having a husband -- even having a husband at home -- did not affect the frequency of missing work (Shinn, et. al., 1988).

Summary

With so many sources of conflict, it is a wonder that working parents have managed to keep a job or to be productive at all! Company needs assessments are beginning to pinpoint where companies may be losing valuable time and talent due to unsolved child care problems, or to the inevitable consequences of combining work and family life. By distinguishing between the avoidable and the inevitable, companies can better understand their options. By helping to patch up problems in the child care market, employers may prevent the absences due to breakdowns. By accepting the fact that women will get pregnant and need some time off, or that children will get sick and need their parents, employer responses will focus on allowing more time off, with the expectation that a grateful employee will work better or longer for that firm.

The research only begins to examine the interactive effects of various problems and solutions. For instance, Emlen (1987) found that companies with lower percentages of employees reporting absenteeism have high percentages reporting stress related to child care. Emlen speculates that the ability to take time off when needed, functions as a safety valve (p. 27). In order for this finding to have practical significance, corporate decision-makers must accept the notion that accommodations to family needs -- particularly more time off -- will ultimately result in an improvement on the bottom line. A leap of faith is required for companies to become more flexible and tolerant of family-related absences, since there is very little research that calculates the return on investment.

Another theme in the research relates to gender differences. While women have more responsibility for child care, men are equally subject to its negative effects when they have the responsibility. Shinn (1988) observes that although men rarely miss work due to child care, when they do, they feel more stress about it than women. Shinn questions whether this is a function of a corporate culture that punishes men who let the family take priority, or the societal norms that stigmatize men who deal with child care (p. 74).

In an analysis of 23 data sets from 18 studies of absence, gender was found to explain less than one percent of the sum of all causes of work absences. (Job satisfaction explained 4 percent; true illness explained the most -- 33 percent) (Haccoun, 1988).

The authors of several studies consistently conclude that absenteeism is not related to gender, but to family status. For instance, Emlen found that in two-earner families, mothers missed 50 percent more days per year than men. He concludes that absence is an agreed-upon solution between spouses. Economics or values could play a role in determining that it is a more reasonable solution for the woman to stay home (p. 48).

The problems specifically related to finding, paying for or sustaining a child care arrangement underscore the fragile foundation upon which the balancing of work and family relies. The cost and instability of child care lead parents to second-best or last minute child care -- both of which often lead to dissatisfaction with child care and interference with work.

As a growing number of companies try to prevent the work interruptions caused by inadequate child care, it becomes necessary to ask the obvious question: Do child care supports solve the problem and save the company money? The one option that can address most of the market failures simultaneously is the on-site child care center. It's easily found, usually subsidized, and almost always of very high quality. Are the problems of finding, paying for or sustaining child care solved by an employer-sponsored center at or near the workplace? How will it affect the inevitable problems such as sick children? With an understanding of the effects of child care problems, we now look at the effects of child care programs, and in particular, the on- or near-site child care center.

The Effects of Child Care Programs

There is little research on specific work-family solutions and their ability to reduce the negative effects of work-family conflicts. The limited body of research conducted over the past 20 years on the effects of the on- or near-site child care center reveals interesting effects.

The context for this discussion is whether benefits -- of any type -- are capable of affecting productivity and other work behaviors. Classic management theory, based largely on the work of Fredrick Herzberg in the 1950's suggests that there are motivators, which are those job characteristics that would cause people to work harder, and satisfiers, which are job characteristics that make the job more agreeable. Motivators, it would seem, are more closely related to productivity. Satisfiers are very important, especially in keeping people, but they do not necessarily make people perform their jobs better.

Motivators include those things that are intrinsic to the job, such as a chance for advancement and involvement in decisions. Satisfiers include such things as good benefits and working conditions. Herzberg found that benefits, although extrinsic to the job, had the ability to make people feel dissatisfied and perform poorly. If the adequacy of satisfiers goes below a certain level, they can reduce productivity, but if they rise to an optimum level, they would not increase productivity. He concludes, "The opposite of job satisfaction is no satisfaction and similarly, the opposite of job dissatisfaction is not satisfaction, but no job dissatisfaction (Herzberg, 1968, p. 57).

While Herzberg's theory is plausible, it is basically untested among today's workers -- baby boomers with a completely different set of values than existed 20 years ago, and women, whose needs and expectations differ as well. For instance, the employer-employee contract is less viable; employees may be more committed to their work than to a particular firm; and people want more leisure time and are willing to make trade-offs to achieve a better quality of life. These changes may influence the way in which company benefits motivate employees or the level at which dissatisfaction sets in and ultimately affects work behaviors.

The other aspect of benefits that has changed is that they were primarily intended to support the occasional tragedies of life and not the day-to-day drudgeries of life. Corporations have been most generous in their efforts to protect employees from future and immediate disaster. They have not yet understood benefits as a way to reduce daily tensions and ongoing personal problems. This amounts to a fundamental change in employee benefits which is likely to result in a change of effects. There is already some evidence of this change in the growth of employee assistance programs and wellness and fitness programs. Work and family responses are beginning to feel more comfortable. Dealing with daily, personal problems at the workplace is making the corporation more of a social institution. Nowhere can the connection be more personal than when an employer provides care to the children of its workers in the form of an on-site child care center.

The studies evaluating the on-site center provide a unique opportunity to look at the potential for benefits to improve job satisfaction and motivation. We now look at the effects of the employer-sponsored child care center to understand more about the relationship between company accommodations and the bottom line.

The Employer-Sponsored Child Care Center

Of all the ways for companies to address the needs of working parents, the on- or near-site child care center has received the most attention. It represents the greatest commitment to becoming a more family-supportive employer. It is the most tangible option -- easiest for nonparent decision-makers to grasp; easiest for newspapers to photograph. And according to the research reported below, it can positively affect the bottom line -- not in the ways managers predict perhaps -- but there is certain payback for the companies willing to invest in this type of child care program for their employees. The research suggests that reduced turnover may be the most positive benefit of creating a worksite child care center.

Seventeen studies on employer-sponsored child care centers have been reviewed. (See Exhibit A) Six of them were empirical in nature, having compared the center users with other groups of employees who did not use the center. Control groups included users of other child care services, nonparents, or employees of a similar company that did not have a child care center. In some cases, these groups were surveyed up to a year before the center opened and up to two years after.

Another six studies involved evaluations conducted for a sponsoring employer. Five of the studies did not include pre-enrollment assessments. They were based on employee perceptions of effects after having used the center for at least five months. Some of them evaluated the perceptions of managers to whom center users reported.

Another five studies surveyed multiple employers in an attempt to measure managers' perceptions in companies already providing child care or in companies that have yet to provide child care assistance.

The Problems in Research Design

One enormous contribution of this research is an illumination of the methodological problems that should be avoided in future research. One of the most important steps in experimental design is to be sure the groups being compared are well-matched. This is important in order to rule out the possibility that other differences between the groups -- besides the use of the center -- are responsible for the difference in outcomes.

In the first empirical study conducted in 1972 at the child care center sponsored by the Federal Office of Economic Opportunity, (OEO) the samples had enough differences to cast doubt on some of the findings. The non-user group, was two years older, less likely to include single parents (54% of non-users were married compared to 35% of the users), and they were more senior and better paid. These differences might account for fewer negative consequences of parenting among the comparison group despite their choice of child care.

In the 1989 study of a center created by a small North Carolina textile firm, employee behaviors were compared to those in another company with a very different culture. The company sponsoring the center was reported to be exceptional in their management of human resources. In comparison to an industry-wide sample of firms, their employees indicated significantly more favorable work-related perceptions. The comparison group was described as needing an improvement in morale, absence and turnover. These differences favor the company sponsoring the center, especially since comparisons were made with the entire employee population, and not specifically users of the center.

The lack of a before and after comparison of the groups under study is what prevents the establishment of causality. One cannot conclude that the differences found between users and non-users did not exist before the center opened. This was a major flaw in the 1976 evaluation of the center created by Control Data and 12 other Minneapolis employers. The absenteeism rates for the three groups were not compared before the center opened. The observed differences might have existed then. It becomes difficult to assert that reduced absenteeism and turnover was caused by the company-sponsored child care center.

The importance of gathering ample information about the control group was underscored by the Control Data evaluation. No information was collected about the cost or quality of the child care arrangements used by employees whose children were not enrolled in the company-sponsored center. There was no explanation given about why those parents did not enroll their children in that center. The non-users' higher rates of absenteeism and turnover might have been due to the inferior quality and less stable arrangements they were forced to make.

As a result of these flaws in the research design, several authors question whether any solid conclusions can be drawn from the research.

The evaluators of the OEO study, concluded, "There is no evidence that OEO users of the CDC (Child Development Center) are absent or tardy less in 1972 than in 1971 before the CDC was in operation" (Krug, et. al. 1972).

As a result of the mismatched textile firms compared in North Carolina, the evaluators conclude, "The provision of the child care benefit did improve attitudes and work-related behavior for the treatment company" [the one with the center]. They cautioned, however, "Causality cannot be ascertained with certainty" (p. 95).

In a review of five center studies, the U.S. General Accounting Office (1986, p. 7) concluded that, "None of these studies, nor any other research came to our attention in this review, adequately established in our opinion a causal relationship between providing child care services and cited benefits to the employer."

In a review of these studies by Miller (1984) the author concludes, "Despite enthusiasm by some chief executive officers, public relations officials and child care advocates, assertions that employer-sponsored child care reduces workers' absenteeism or tardiness, or that it increases workers' productivity or job satisfaction are not supported by credible research" (p. 277).

What Can Be Learned

Despite these assertions, there is something to be learned from the research. One of the primary difficulties in executing this research is isolating the child care center from other workplace problems, policies or programs. This research dilemma actually sheds light on the center's relationship to other company concerns and initiatives. For instance, the Burud, et. al. evaluation of Union Bank's center in California credits the center with reducing the length of maternity leave. Users of the center were out 1.2 weeks less than mothers using other forms of child care. However, once the infant program was filled, no more mothers could report that advantage. It is clear that the size of the infant program in the company's center will affect the overall impact on maternity leaves.

In the 1984 study of the child care center at the Catherine McAuley Health Center (CMHC) in Ann Arbor, Michigan, center users were found to have a higher level of satisfaction with their child care arrangements, but they also had more work-related problems caused by the arrangement than did users of the hospital's family day care program or other non-users. These problems did not occur frequently and were most often related to the need to stay late or leave early. Center users also experienced greater stress about child care, and more problems when children became ill. Non-user parents relying on in-home care had significantly fewer work-related problems caused by their arrangement than did family day care users. This study is helpful in showing that the center may not be a panacea for all child care problems. In fact, centers may create some new problems of their own.

Some companies fear that attendance problems may result from parent's frequent visits to the center. The study of the State of Florida's child care center found that while 62 percent indicated that the ability to visit their children during the day was important, only 10 percent visit regularly, and most made less than one visit per week.

Some of the studies suggest that the benefits of the center go beyond those employees able to use it. Co-workers are reported to be less strained because working parents are absent less often and are better able to concentrate. In the Union Bank study, some supervisors reported improved morale among co-workers of center users, and 60 percent of them reported that their own morale was improved. As one commented, "I would have to do her job if she were tardy or absent, so it's been good for me" (p. 10).

Another important question raised by the research is the relationship between the child care center and absenteeism. Consider the following findings:

- In the OEO center (Krug, 1972), the users used slightly more sick hours than non-users before the center opened. However, they also averaged a greater increase in sick leave after the center opened (up to 3.95 days per pay period for users vs. 3.17 days for the non-users). There were no explanations provided as to the reasons for increased sick leave.
- One year after the Union Bank center opened, employees using the center were absent 1.7 days less per year than other parents with children in child care. However, the absenteeism rate for center users didn't drop compared to a before enrollment measure. The authors point out that at least the absence rate didn't increase, as it did for non-users. They contend that children have the highest incidence of

illness during the first year they are in group care. They concluded that, "Absenteeism would be expected to drop during the second and subsequent years of the program's operation."

- In the study of New York State's child care center in Albany, fifty-five percent of users said the center had no effect on absenteeism. While 17 percent said their absences had been reduced due to the center, 19 percent said that absences increased. These were primarily parents of infants.
- In a comparison of 20 hospitals in the Sisters of Providence network, one of which had a center that was evaluated, the author concludes "No evidence was found to support the contention that on-site child care diminishes absenteeism" (p. 16). The hospital with on-site care had either average or worse absence rates than other sites. Hospital staff indicated that "the mere presence of an on-site facility does not necessarily reduce interruptions, lateness, and other absenteeism since there are still difficulties associated with getting children ready for the day, delivering them to be facility, and so forth" (Emlen, 1987).

While several other studies did report positive effects on absenteeism, these findings demonstrate the complexity of measuring absenteeism -- and eradicating it. As noted earlier, some absenteeism may be healthy.

Analysis

The findings from these studies are most illuminating when comparing those that measured perceptions of change and those that measured actual behavior change. Tables 2, 3, and 4 present the findings from the seventeen studies on employer-supported child care that have been analyzed for this paper. Table 2 presents findings from eight studies where the effects of child care were measured by manager perceptions. Table 3 presents the perceptions of employees who use the centers, and Table 4 shows the strength of findings from the empirical studies where differences between center users and some other comparison group were made.

Manager Perceptions

The eight studies reviewed here include three national surveys of multiple companies providing child care centers. Two of the eight studies on manager perceptions were conducted on statewide samples of employers who may or may not have had a child care program. The last three studies in this group measure the perceptions of managers who supervise center users. These eight studies represent perceptions of managers at varying degrees of closeness to the situation. Some samples include managers able to observe employee work performance, others who might hear news of effects within their organizations, and those who have formed opinions based on news reports and personal biases.

Not surprisingly, the managers least likely to perceive any positive effects of having a child care program were found in New York State where the overwhelming majority of employers were not providing any child care support. In a 1986 survey of 1,041 small, medium and large firms for the Governor's Task Force on Child Care, there was no outcome that more than 44 percent of managers believed would be positively affected. These managers were more unsure of the effects than they were knowledgeable about the absence of effect or a negative effect. Managers were most likely to expect an improvement in employee morale and a reduction in absenteeism, turnover and employee stress. These ratings are far below the other managerial ratings.

The New York State study is interesting in that it compares the views of small, medium and large firms. Table 5 indicates that the larger the company, the more likely the manager is to perceive a positive gain from having employer-sponsored child care. This may be an explanation for why the other statewide surveys of employers with and without child care support had ratings comparable to the managers working in companies with child care. The firms surveyed were primarily large.

Three national surveys of employers with some form of child care assistance were conducted in 1978, 1983 and 1984 (Perry, 1978; Magid, 1983; Burud, et. al. 1984). Collectively, they studied 440 firms, although it is unclear whether there was overlap in the samples. The majority of employers in all samples sponsored a child care center. Improved recruitment and decreased absenteeism were the two strongest perceived effects of child care initiatives.

The three centers whose evaluations included surveys of the supervisors of center users differ considerably in their top ratings of a center's potential effects. Improved morale was perceived to have been the greatest result in two of these studies.

Across all eight studies of managers' perceptions, morale is perceived to be the strongest outcomes of company-sponsored child care, with five of the eight employers giving it their highest ranking. Decreased absenteeism was the second most frequently mentioned benefit of a child care program. Managers from the Florida child care center gave absenteeism their top ranking, while four others had it as their second most perceived effect.

Parent Perceptions

Six studies surveyed the users of the child care centers. (See Table 3). These include three state-sponsored centers, two hospital-sponsored centers and one corporate program (Dominion Bankshares in Virginia). Generally, the percent of users reporting a positive effect on any of the measures presented is higher than the percentages of managers reporting such effects. There is far less consistency in the outcomes perceived by parents across these particular studies. Two of the surveys reported morale as the most likely benefit of center use. Employees also were likely to believe that they were absent less and produced more because of the child care center.

Actual Outcomes

In the six experimental studies conducted between 1972 and 1988, with 12 different possible effects tested, the strongest effect of an employer-sponsored child care center appears to be reduced turnover. Four of the six studies found statistically significant differences in turnover rates among center users and a comparison group. (One of the studies was a cost/benefit analysis with a comparison group and did not conduct statistical tests).

Recruitment is the next most positive outcome, with two studies showing statistically significant findings on a measure that asked whether the employee's acceptance of employment at the firm was related to the child care center. Statistically significant findings also occurred on a measure that asked whether center users were more likely to recommend the employer because of the center. Such recommendations are likely to improve recruitment efforts.

One of the most curious findings suggested by several of the studies is the variable and questionable impact of the center on absenteeism. One would expect absences to decrease among center users based on program stability and quality. This seems to be confirmed, or at least consistently found among the studies. Provider illness or program breakdown was not found to be a source of absence. However, absence due to sick children is another story. As mentioned earlier, several studies reported increased absenteeism among center users, or that absenteeism was higher among center users than it was for those in the control group. The reasons were largely sick children.

The incidence of absence related to company-sponsored centers may be a function of the center's policy and provision for sick children. Many company centers have stricter sick policies than community centers and are less likely to admit mildly ill children. One reason for this stricter policy is an enormous concern about liability. Secondly, the company's absenteeism rate could skyrocket should the illness become an epidemic. At a community center, on the other hand, parent absences due to an epidemic would be distributed among a number of employers. As a result, these studies imply that on- or near-site centers may not reduce absenteeism due to sick children unless they make special provision for sick child care. [Note: In checking this finding with several directors of on-site centers, most agreed that the policy for sick children affected parents' absences. However, some felt that because the parents were in closer proximity to the center, the child with a low-grade fever could be observed for a few hours without the parent having to leave work. Also, the parent using an on-site center is able to administer medications, where another parent whose program is farther away might have to miss work to give such medicine.]

It is not clear from the research whether the possible increase in absenteeism due to sick children is offset by the reduction of absenteeism due to fewer breakdowns, provider illnesses, or worries over quality as the result of having a child care center.

Perceptions Versus Reality

When comparing the three tables that summarize the findings from the seventeen studies reviewed, there is a startling difference in the outcomes perceived to occur by employees and managers and those that did occur as reported in the experimental studies. In the experimental studies, the primary benefit of an employer-sponsored child care center is reduced turnover and improved recruitment. Managers and center users are more likely to perceive improved morale as the greatest benefit of a center. Managers across studies agree that absenteeism can be reduced and employees are more likely to report an improvement in productivity.

While all effects received generally favorable ratings from managers and employees, the actual benefits of a child care center as determined by empirical research may be very different than expected. This is important if companies are to establish realistic expectations for their programs. Also, given labor shortages and the competition that will exist among employers, turnover and recruitment may be the most important benefit of all, providing a more compelling reason for companies to consider an on- or near-site child care center.

CONCLUSIONS AND POLICY RECOMMENDATIONS

While there are many kinds of work-family conflicts and numerous policies and programs that can address them, this paper focused on absenteeism caused by child care problems and the effects of an employer-sponsored child care center. Working parents may miss work to look for child care, to cover for a breakdown in care, or care for a sick child. The on-site center makes things easy -- until it's filled. It will eliminate breakdowns, since these centers are highly stable. But they may not solve absence due to sick children, unless provisions are made for sick care.

There are many other ways to reduce family-related absences. Referral services can shorten the search time for parents. Breakdowns in care can be reduced by improving the quality and reliability of community-centers or increasing parents' ability to afford better care. Allowing sick leave for family reasons will not reduce absenteeism, but it will reduce the tension associated with having to lie about the reason. Furthermore there is evidence to suggest that these absences do not necessarily translate into lowered productivity. The employee's gratitude for the flexibility -- and the permission -- to tend to family needs is expressed by working at home or after hours to make up the work.

It is clear that some absenteeism due to family responsibilities is inevitable. Expecting perfect attendance -- from anyone -- is unrealistic and has been shown to result in increased stress. Stress often leads to absenteeism.

This analysis makes clear the cyclical nature of the relationship between work and family. Family problems affect work, and lack of accommodation at work further impacts the family, which may eventually spill over to work. Addressing work-family conflicts can be a hydraulic process: a solution created to solve one problem, may create problems in another area. The possibility that an on-site center increases absenteeism due to sick children is an example. It is critical that we begin to sort out the complexities of this relationship to reduce hardships both at home and at work. The need to better understand this complicated relationship is the basic theme of the recommendations below.

1. **There is a need for more research, but not research whose main purpose is to connect child care and the bottom-line.** Company needs assessments are an exception because they serve a planning function and they also validate the data for the individual employer. Experimental research, however, has to progress to a new level that acknowledges the complexities of the problem and the multiple solutions that companies offer.

   It is becoming increasingly difficult to evaluate one company program or policy because companies are typically packaging a set of responses. Attributing causality to any one solution is almost impossible. What is useful is an understanding of the change in culture that results from all such new initiatives and how the culture, in its entirety, affects working parents.

2. **Develop better measures, research tools, and methodologies** to create research that will yield reliable data. With the need for more sophisticated hypotheses and comparisons, it is critical that researchers be equipped with more sophisticated research tools.

3. **More pooling of firms' anonymous needs assessments** would help build a base of data on sources of work-family conflict.

4. **An analysis of on-site centers' sick policies** as compared to community-based centers would shed light on the effects of these policies on parents' absenteeism rates. Companies can develop more realistic expectations and better design a balance between internal absence policy and the centers' sick policy. Other centers could recognize the effects as well.

5. **Research that compares the effects of work-family** issues within:
   - different industries;
   - different size companies;
   - different regions of the country;
   - different communities (size, rural/urban/suburban);
   - different ethnic groups;
   - different income groups, especially low and middle income groups.

6. **Study parents who work non-standard hours.** Very little is known about the survival patterns of those who work on shifts, especially when the spouses work on different shifts. Working evening hours may create all sorts of new logistical dilemmas that call for unique and innovative company responses.

7. **Research is needed on the work-family conflicts of the welfare women with young children who must now work.**

It is important to see what levels of accommodation are necessary to reduce negative work-on-family consequences. Although it is assumed that, like the majority of mothers, welfare mothers should work, too, the research clearly shows that the family is negatively affected when the woman is not doing what she wants. Forcing mothers to work who want to be home with their children may have serious negative consequences on work, unless work policies and support services are tailored to these unique needs.

8. **A mechanism for translating and disseminating this research to companies** is important. Many companies are beyond the anecdotal estimates of cost savings. The more complicated the research gets, the more companies are going to need an interpreter of results so they can be used to influence policy.

EXHIBIT A

17 STUDIES OF EMPLOYER-SUPPORTED CHILD CARE

RESEARCH SITE	RESEARCHER/CITE	SAMPLE	RESEARCH DESIGN	MAJOR FINDINGS
Federal OEO-Washington, D.C.	Krug, et. al. (1972)	50 parents from center 50 in control group	Pre/post test of users compared to control group	Center users had greater increase in sick leave. Annual leave taken by users decreased after center opened, it decreased more for non-users
Control Data Consortium - Minneapolis, MN	Milkovich & Gomez (1976)	30 center users; 30 parent non-users; 30 non-parents	Post-test of center users compared to 2 control groups	Lower employee absenteeism and turnover rates were related to enrollment in the center, while no relationship to job performance was found
North Carolina, Textile Firm	Youngblood, et. al. (1984)	410 people in company with center and 3 divisions of another firm with no center	Comparisons of employees in firm with center and those in firm without	Center users higher on job satisfaction, commitment, organizational climate, and lower on turnover. 19% drop in absenteeism and 63% drop in turnover rate in company with center
Multiple Companies-National	Dawson, et. al. (1988)	311 employees in 29 companies with various child care programs	Post-test of employees using various company-sponsored child care programs	Program users likely to recommend employer, continue with company, work overtime. Child care affected acceptance of promotion. Center yields greater effects than referrals or financing

RESEARCH SITE	RESEARCHER/CITE	SAMPLE	RESEARCH DESIGN	MAJOR FINDINGS
Catherine McAuley Health Center-Ann Arbor, MI	Marquart (1988)	86 parents using hospital-based child care center or family day care program; matched to group of other child care users	Pre/post test of hospital center users compared to users of hospital-sponsored family day care and parents using other child care	Users had decreased absences of 1½ days per employee. Recruitment, retention and recommending employer more likely among users. No differences in job satisfaction, stress or turnover
Union Bank-Los Angeles, CA	Burud, et. al. (1988)	87 users one year before center opened and one year later	Pre/post test of users compared to control group, parents on waiting list and other bank employees	Center users absent 1.7 days less than other parents; maternity leaves were 1.2 weeks shorter for center users; 61% of job applicants said center was a factor in accepting a job at banks. Turnover and public relations also positively affected
Dominion Bank-Roanoke, VA	Burge & Stewart (1988)	400 randomly selected employees	Post-survey of all employees and users	Users believe that the center helped reduce absenteeism and aided recruitment and improved productivity
Methodist Hospital	(1984)	123 users of center	Post survey of user perceptions (71% response)	Center helped keep 41% of users; 51% said center was a factor in accepting job; 61% said productivity improved; 79% said morale increased

RESEARCH SITE	RESE[illegible]	SAMPLE	RESEARCH DESIGN	MAJOR FINDINGS
State of New York Children's Place, Albany, NY	WRI (1980)	88 users of center 1 year after open-	Post survey of user (66% response)	35% of users said center enabled them to stay working; 73% said absences declined; 47% said productivity increased; 83% said they worry less
Kid's Play, State of Wisconsin Pilot Day Care Center	State (1987)	56 users 35 supervisors of center users	User perceptions surveyed before enrollment, 5 months after opening and 17 months after. Manager perceptions also surveyed	89% users satisfied with center quality. 73% said center helped them be more productive; 82% said center reduced worry and had positive effect on scheduling
Ina S. Thompson Child Care Center-State of Florida	Department of Administration (1987)	37-62 users 42 supervisors of center users	User perceptions surveyed 9 months after opening and interviewed 1 year later. Interviews with managers	Users reported positive effects on works. Center helped reduce worry about children, 49% said they were absent less, 60% were late less, and 93% would consider child care before changing jobs
Multiple Companies-National with child care	Perry (1978)	58 employers, most with on-site centers	Survey of manager perceptions	Two-thirds or more of managers believe that the child care program helps recruit, lowers absenteeism, and improves attitudes toward company

RESEARCH SITE	RESEARCHER/CITE	SAMPLE	RESEARCH DESIGN	MAJOR FINDINGS
Multiple Companies-National with child care	Mayid (1983)	204 employers with child care programs, mostly on-site	Survey of manager perceptions	Asked to rank the five most significant effects of their child care program, managers listed listed recruitment; morale, lower absenteeism and turnover.
Multiple Companies-child care	Burud, et. al. (1984)	178 employers most with on-site centers	Survey of manager perceptions	Managers believe that turnover, productivity, morale, and recruitment were positively affected by center while absenteeism and tardiness were reduced
Statewide Survey of Employers-Minnesota	AAUW (1982)	563 firms with and without child care	Survey of manager perceptions in 200 randomly select companies and subsequent interviews	More than two-thirds of companies believed that child care support would decrease absenteeism and tardiness and increase productivity, recruitment, retention, and morale
Statewide Survey of Employers-New York	Governor's Commission on Child Care (1986)	1041 firms with and without child care	Survey of manager perceptions in 10,558 firms	Belief in child care's ability to improve work performance is related to company size, with larger companies more likely to believe that recruitment, retention, absenteeism, tardiness stress and morale are are positively affected.

Table 1

DIRECTION OF W-F CONFLICT

(Percent of employees in the sample who said that work and family responsibilities interfered with each other in some way.)

	Work Interferes with Family		Family Interferes with Work	
	Men	Women	Men	Women
Fortune (1987)	32%	41%	16%	18%
Fernandez (1986)	22	43	13	39
Merck & Co., Inc. (1986)	37	41	18	21
Large Chemical Company	35	56		

Table 2

PERCEPTIONS OF MANAGERS REGARDING EFFECTS OF EMPLOYER-SPONSORED CHILD CARE CENTER

	Managers of Center Users			Managers in Multiple Companies with Child Care			Managers in Multiple Companies with and Without Child Care	
	Dominion Bank 1988	WI 1987	Florida 1987	Perry 1978	Magid 1983	Burud 1984	Minnesota 1982	New York 1986
Improves Productivity	**48%**	60%	38%	%	*	49%	72%	32%
Improves Motivation		43			67	63		
Improves Satisfaction		66			170	83		
Improves Attitude Towards Work	40			55				
Improves Morale	**70**	**88**			345	**90**	**85**	**44**
Reduces Absenteeism	45	71	**62**	**72**	**214**	53	**89**	**42**
Reduces Tardiness	33	54	43		88	36	67	36
Reduces Stress								41
Increases Scheduling Flexibility						50		
Reduces Turnover		23		57	211	65	71	39
Improves Attitude Towards Employer				65				
Increases Loyalty/ Commitment						73		35
Increase Women Returning from Leave		43			208	79		
Improves Recruitment				**88**	**448**	**85**	73	35
Improves Public Image/ Publicity		**77**		60	137	80		
Increases Availability of Temporary Help					26			
Improves Quality of Work Force					205	42		
Increases Equal Employment Opportunity					13	40		
Improves Community Relations				36	154	**85**		
Improves Quality of Products/Services	30				48	37		
Increases Profits							41	
Reduced Training Costs								14

Bold face numbers indicate the first and second highest rankings
***The Magid study findings are not percentages, they are rank orderings**

Table 3

Perceptions of Employees Using Employer-Sponsored Child Care Centers

	Dominion Bank	Methodist Hospital	Southeastern Hospital	State of Wisconsin	State of Florida	State of New York
Improves Productivity	67	61	51	**73**	60	**47**
Increases Motivation				72		
Increases Job Satisfaction						
Improves Morale		**79**				
Decreases Absenteeism	**84**	**75**	67	72		
Decreases Tardiness	60	**79**	**60**	46	60	
Reduces Stress					57	**83**
Improves Scheduling Flexibility	40	69		**82**		
Able to Work More Overtime	63	62				
Able to Work Odd Shifts		43	42			
Reduces Turnover	70	41	**72**	25	43	35
Improves Attitude Towards Employer					**84**	
Increases Women Returning from Leave		33				45
Improves Recruitment		51			81	
Improves Public Image					**87**	
Would Recommend Employer	**74**					
Improves Promotability		17				

Bold face numbers indicate the first and second highest rankings

Table 4

Findings from Experimental Studies

	Krug, et. al (1972)	Milkovich, et. al (1976)	Youngblood et. al. (1984)	Dawson et. al (1984)	Marquart (1988)	Union Bank (1988)
Improves Productivity/ Performance		o		*		+
Increases Job Satisfaction			*		o	
Improves Morale						+
Improves Organizational Climate			*			
Decreases Absenteeism	--	*	o	o	+	+
Decreases Tardiness	--					+
Reduces Stress					o	
Able to Work Overtime				*		
Reduces Turnover		*	*	*	*	+
Increases Loyalty/ Commitment			*		o	
Increases Women Returning From Leave						+
Improves Recruitment	+			*	*	+
Would Recommend Employer				*	*	
Improves Community/ Public Relations						+
Improves Promotability				o		

* Statistically significant differences found between center users and companion group(s).

+ Differences found between center users and others, but no statistical test proved it.

o No differences found, or couldn't measure the outcome in question.

- The opposite effect occurred, e.g., absenteeism increased.

Table 5

Effects of Child Care Support on Employees' Work Behavior: Percent Believing Support has Positive Effect by Size of Company

	Size of Company			
	Up to 100	101-500	501-1500	Over 1500
(BASE)	(285)	(253)	(220)	(204)
Recruitment	29.1%	34.0%	44.6%	47.6%
Retention	33.0	34.8	49.5	52.9
Absenteeism	31.6	41.5	54.1	56.9
Tardiness	27.0	36.4	47.3	48.5
Stress	32.3	40.3	53.2	54.9
Morale	37.2	44.7	57.3	54.4
Loyalty	32.6	34.8	44.1	41.2
Training Costs	12.6	13.5	17.3	18.1
Productivity	27.0	30.4	40.0	40.2

Source: New York State Commission on Child Care. Employers and Child Care in New York State, (1986) p. 26.

REFERENCES

American Association of University Women (1987). Employer-Supported Child Care in Michigan. AAUW: Lansing, MI.

Bartolome, Fernando and Paul A. Lee Evans (Spring, 1979). Professional Lives Versus Private Lives - Shifting Patterns of Managerial Commitment. Organizational Dynamics. AMACOM: New York.

Burden, Diane S. and Googins, Bradley K. (1987). Balancing Job and Homelife Study. Boston University School of Social Work: Boston, MA.

Burge, D.L. and Stewart, D.L. (1988). The Dominion Bank Story. Virginia Tech University: Roanoke, Va.

Burud, Sandra L., Aschbacher, Pamela R., McCroskey, Jacquelyn (1984a). Employer-Supported Child Care: Investing in Human Resources. Auburn House Publishing Company: Boston, MA.

Burud, Sandra L. (1984b) Productivity Impact Study of Kathy Kredel Nursery School. Methodist Hospital of Southern California: Arcadia, CA 91006

Crouter, Ann C. (1986). Rethinking the Dual Earner Family from a Life Course Perspective. Pennsylvania State University.

Crouter, Ann C. (1984). Spillover from Family to Work: The neglected side of the work-family interface. Human Relations, Vol. 37, No. 6, pp. 425-442.

Emlen, Arthur C., Koren, Paul E., Louise, Dianne (1987). 1987 Dependent Care Survey: Sisters of Providence, Final Report. Regional Research Institute for Human Services, Portland State University: Portland, OR.

Employee Benefits Research Institute (1987). Fundamentals of Employee Benefit Programs. Employee Benefit Research Institute: Washington, D.C.

Etzion, Dalia (Summer, 1988). The experience of burnout and work/non-work success in male and female engineers; A matched-pairs comparison: Human Resource Management. Vol. 27, No. 2, pp. 163-179.

Fernandez, John P. (1986) Child Care and Corporate Productivity. Lexington Books: Lexington, MA

Florida Department of Administration (1987). Florida Child Care Pilot Project. (Final Report to the Florida Legislature) : Tallahassee, FL.

Friedman, Dana (March-April, 1986). Child care for employees' kids. Harvard Business Review. 64: 28-34.

________ (June, 1986). Elder care: The benefit of the 1990's? Across the Board.

________ (1985). Corporate financial assistance for child care. Research Bulletin no. 177. The Conference Board: New York.

________ (1987). Family-supportive policies: The corporate decision-making process. Report no. 897. The Conference Board: New York.

Galinsky, Ellen (1986). Family life and corporate policies. In Yogman, Michael W. and Brazelton, T. Berry (Eds.) In Support of Families. Harvard University Press: Cambridge.

Galinsky, Ellen and Hughes, Diane (1987). The Fortune Magazine child care study. (Unpublished paper). Bank Street College of Education: New York.

Galinsky, Ellen (1987a). The Impact of Child Care Problems on Parents on the Job and at Home. (Unpublished paper). Bank Street College of Education: New York.

Hughes, Diane (1988). Work and Family Life Studies: An Overview of Ongoing Research and Selected Findings. (Unpublished paper). Bank Street College of Education: New York.

Haccoun, Robert (May-June, 1988). Another myth goes "poof." Canadian Banker. Vol. 95, No. 3: pp. 54-56.

Herzberg, Fredrick (1968). One more time: How do you motivate employees. Harvard Business Review. January-February 1968, pp. 53-62.

Hofferth, Sandra L. (1989). What is the Demand for and Supply of Child Care in the U.S.? (Testimony presented before the House committee on Education and Labor) Urban Institute: Washington, D.C.

Hynes, Kathleen (1988). Employee Survey for Manville's Dependent Care Task Team. Denver, CO.

Johnston, William B. and Packer, Arnold J. (1987) Workforce 2000. Hudson Institute, Indianapolis, IN.

Kagan, Julia (1983). Survey: Work in the 1980's and 1990's. Working Woman. July, 1983, pp. 16, 18.

Kamerman, Sheila B. and Kahn, Alfred J. (1987). The Responsive Workplace: Employers and a Changing Labor Force. Columbia University Press: New York.

Kanter, Rosabeth Moss (1977). Work and Family in the United States: A Critical Review and Agenda for Research and Policy. Russell Sage Foundation: New York.

Krug, D.N., Palmour, V.E., and Ballassai, M.C. (1972). Office of Economic Opportunity Child Development Center, Westat, Inc., Rockville, MD.

Majid, Renee Y. (1983). Child Care Initiatives for Working Parents. American Management Association: New York, NY.

Marquart, Jules M. (1988). A Pattern Matching Approach to Link Program Theory and Evaluation Data: The Care of Employer-Sponsored Child Care. Cornell University. (Dissertation). Ithaca, NY.

Milkovich, G.T. and Gomez, L.R. (1976). Day Care and Selected Work Behaviors. Academy of Management Journal. 19 (1) pp. 111-115.

Miller, Thomas I. (1984). The effects of employer-sponsored child care on employee absenteeism, turnover, productivity, recruitment, or job satisfaction: What is claimed and what is known. Personnel Psychology. 37, pp. 277-289.

New York State Commission on Child Care (1987). Employers and Child Care in New York State: Albany, NY.

O'Connell, Martin and Bloom, David E. (February, 1987). Juggling Jobs and Babies: America's Child Care Challenge. Population Reference Bureau. No. 12: Washington, D.C.

Opinion Research Corporation (1988). A National Survey of Caregivers, Final Report. American Association of Retired Persons: Washington, D.C.

Perry, Katherine (1978). Employers and Day Care: Establishing Services Through the Work Force. Washington, D.C.: U.S. Department of Labor, Women Bureau; U.S. Government Printing Office.

Ransom, Cynthia and Burud, Sandra (1988). Productivity impact study conducted for Union Bank Child Care Center. Unpublished report: Pasadena, CA.

Ransom, Cynthia, Aschbacher, Pamela, and Burud, Sandra (1988). The return on an investment in child care benefits --is it real? The Union Bank Story. Unpublished manuscript: Pasadena, CA.

Regional Research Institute (1987), Employee Profiles: 1987 Dependent Care Survey, Selected Companies: Portland, OR.

Repetti, Rena L. (1987). Work and Family Roles and Women's Mental Health. Department of Psychology, University of Southern California.

Rosow, Jerome M. (1981). Productivity: Prospects for Growth. D. Van Nostrand Company: New York.

Shinn, Marybeth, Blanca Ortiz-Torres, Anne Morris, Patricia Simko, Nora Wong (1987). Child Care Patterns, Stress, and Job Behaviors Among Working Parents. (Unpublished paper). New York University.

U.S. Bureau of the Census (June 1986). Fertility of American Women: June 1985 Current Population Reports Series, p. 20, No. 406: Washington, D.C.

U.S. General Accounting Office (1986). Child Care: Employer Assistance for Private Sector and Federal Employees. GAO, Report No. 66D-86-38: Washington, D.C.

Wisconsin Department of Employment Relations (1987). State of Wisconsin Pilot Day Care Center Final Report.

WRI (1980). Children's Place at the Plaza, Evaluation Report: Albany, NY.

Work and Family: A Changing Dynamic (1986). BNA Special Report. Bureau of National Affairs: Washington, D.C.

Youngblood, Stewart, A, and Chambers-Cook, Kimberly (1984). Child care assistance can improve employee attitudes and behavior. Personnel Administrator. February, 1984, pp. 45-95.

28. ADDRESSING THE SUPPLY PROBLEM: THE FAMILY DAY CARE APPROACH

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The Conference Board

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28. ADDRESSING CHILD CARE SUPPLY: THE FAMILY DAY CARE APPROACH

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The Conference Board

Child care is a national policy concern because of its potential impact on the development of children, the welfare of families, and the employment and productivity of working parents. There is a growing consensus among the public, Congress and corporations that something should be done to improve child care services to address increasing poverty rates, labor force shortages, stagnating productivity, and under-educated children. Yet as child care finally grabs the national spotlight, the debate lingers over what are the problems and how best to solve them. There is the common perception that the primary problems relate to supply, quality, cost and access. The solutions will differ depending on one's definition of the problem. Unfortunately, we know less than we should about the interaction of these problems or the effects of various solutions in addressing them.

This paper will take a look at the supply problem and review a particular method of remedying it: expansion of family day care homes. At the heart of the debate on supply is the question of whether there is a shortage of child care services, and if there is isn't, why are hundreds of referral agencies around the country spending millions of corporate dollars trying to recruit new child care providers? The specific programs reviewed in this paper were spearheaded by I.B.M. Corporation, Bank of America, and Mervyn's Department Stores.

This paper concludes with policy recommendations for ways to remove obstacles to the expansion of family day care and suggestions for better targeting resources into family day care recruitment. Recommendations will also consider some of the implications of this supply building for the other problems in the child care delivery system, namely quality, cost and access.

IS THERE A SHORTAGE OF CHILD CARE?

The public tends to believe that there are not enough child care services to meet the demand for them. In a 1987 survey by the American Federation of State, County and Municipal Employees (AFSCME), more than half thought there were not enough; a quarter thought there were. In a 1985 survey of 800 women by Glamour magazine, 76 percent agreed that child care facilities should be more readily available for workers.

There are continual reports of a nationwide shortage of child care workers. This is a function of a decline in the population of 18-24 years old -- prime years for child care workers. The labor shortages plaguing other service industries affect child care as well. The field is also less attractive to young women faced with employment opportunities that offer better pay, more respect and no fingerprint checks. As a result of these factors the supply of new providers is unable to offset rampant turnover among child care workers. An estimated 60 percent of family day care providers cease providing care every year and 40 percent of center staff leave the field each year. (Galinsky, 1988)

Another indication of a shortage is that centers typically report waiting lists. This is evidenced by the fact that these programs rarely advertise since they have no openings to fill. Parents attest to this in their responses on company needs assessments suggesting difficulty in finding child care. In six surveys of employees working at 40 companies, between 30 and 64 percent of working parents report at least some difficulty finding child care. (See Table 1) Do these assertions indicate a real shortage or a mismatch of demand and supply for parents in various income groups, regions of the country, and with different program preferences and ages of children?

For instance, one large, pharmaceutical firm in the Northeast found that the kind of care being sought makes a difference. Where half of all parents reported some or a great deal of difficulty finding care, 79 percent reported difficulty when looking for sick child care, 60 percent found infant care difficult to find, and 54 percent reported difficulty locating school-age care. The lowest percentage (39 percent) said that it is hard to find child care for their preschoolers.

In a study of employees in 33 firms in Oregon, Emlen (1987) found that those reporting difficulty finding child care are twice as likely to make arrangements with which they are dissatisfied, twice as likely to report stress about child care, and, almost invariably, more likely to feel that child care is difficult to continue or maintain. These difficulties reach the workplace in the form of stress and absenteeism, which was confirmed in a nationally representative study conducted by Bank Street College for Fortune magazine. (Galinsky, 1987)

This difficulty in finding care may even lead to reduced labor force participation. Walker and Woods (1976) report that 26 percent of nonworking mothers would work if child care were available and affordable, and 13 percent said they would work more if they could obtain the child care they needed. In several company studies, it was found that new mothers do not return from maternity leave -- at all or as soon as they might have -- due to the dearth of infant care services.

Despite these reports from parents and providers, economists who have recently begun to focus on child care proclaim doubts about a shortage. At a 1988 symposium sponsored by the Child Care Action Campaign where a group of economists and child care experts were convened, Rachel Connelly, an economist from Bowdoin College, concluded that, "Economists who say the child care market is in equilibrium assert that parental struggles stem not from an imperfect market -- which is what a shortage indicates to them -- but from the fact that many parents simply do not have enough money to pay for quality child care at the market price. (p. 24) Connelly acknowledges the work of Myra Strober who concludes that even a market in equilibrium "leaves many families unable to satisfy their desire to purchase formal child care." (1975, p. 354)

Compared to perceptions and academic theory, what does the data show regarding the demand and supply of child care?

Demand. Among the 22 million children under the age of six, about half have working mothers. (Hofferth, 1989) During the 1980's, the number of preschoolers increased, as did the labor force participation of mothers. (See Table 2) While the size of the preschool population will not rise significantly during the 1990's, 40 percent more of them will need child care because their mothers are more likely to work. (Mathematica, 1989, p. 5). Hofferth (1989) predicts that if trends continue as they were between 1970 and 1985, by 1995, two-thirds of children will have mothers working, or just under 15 million preschoolers.

These figures may not incorporate the impact of the Family Support Act which requires a mother receiving public assistance to seek employment if her children are older than three. This will swell the ranks of child care seekers, whose low-level skills and low wages will limit their child care options and prevent their purchasing quality care.

Of the 11.3 million children under age six whose mothers worked in 1985, 48 percent, or 5.4 million children were in the care of relatives. Another .6 million, or 6 percent, relied on an unrelated person -- a sitter, nanny, or au pair in the child's home. The remaining 5.3 million used out-of-home, non-relative care. This latter care includes 22 percent who use family day care (including both licensed and unlicensed care) where a neighborhood woman (usually) cares for the child in her own home. Another 23 percent use a day care center or nursery school (Hofferth, 1987, Bureau of the Census, 1987).

These rates of use indicate a decline in care by relatives and by sitters in the home, small increases in family day care home use and dramatic increases in center-based care. (See Table 3) (Hofferth 1989)

Supply. In 1986, there were an estimated 63,000 child care centers, of which 40,000 were estimated to be in operation. (Prosser, 1986 in Mathematica, 1989, p. 1) These centers had a capacity for approximately 2.1 million children. The number of centers has doubled over the past 10 years. (Hofferth, 1989, p. 7).

The number of family day care homes is more difficult to estimate because a sizeable portion of them -- somewhere between 50 and 90 percent -- are unlicensed. In 1986, there were 165,000 licensed homes, of which 105,000 were in operation. (National Association of the Education of Young Children [NAEYC] National Day Care Home Study, Divine-Hawkins, 1981, in Mathematica, 1989, p. 1) These homes had the capacity to serve a half million children. Between 1977 and 1987, licensed family day care homes increased by about one-third. (Hofferth and Phillips, 1987)

Hofferth estimates that if there are 2.6 million licensed slots (2.1 million in centers and .5 million in family day care homes) and 5.3 million children in out-of-home, non-relative care, about one-half of those using out-of-home care are in unlicensed programs. She concludes that the shortage may pertain to a deficiency of licensed slots.

In a study of Child Care Supply and Needs by Mathematica Policy Research, Inc., the local market for child care was tested in each of three cities. These locations were the demonstration sites for the Teenage Parent Demonstration project of the U.S. Department of Health and Human Services designed to test innovative approaches for increasing the self-sufficiency of welfare-dependent, adolescent parents. Interviews were conducted with 167 child care centers, 160 regulated family day care providers, 294 unregulated family day care providers, and 989 child care users. These data were consistent with national figures cited by Hofferth. They found that half of preschoolers were cared for by their non-working mothers; about 30 percent had care provided by relatives; about 15 percent were in family day care; and the remaining 11 percent were in child care centers.

The study found that 30 percent of parents preferred a different child care arrangement, primarily to improve quality and learning experiences for their children. Less than five percent indicated that costs were the reasons for desiring a change. (p. 11)

A significant number of mothers with preschoolers (19 percent) said they would work if acceptable and affordable child care were available. These parents had a reasonable view of what they would have to pay, "suggesting that the barrier was not cost per se, but access to providers." (p. 11)

Cost. Hofferth (1987) found that in 1985, 20 percent of families in which the mother works did not pay anything at all for their child care. Relatives get paid about half the time. Among those parents who pay, child care accounts for about 10 percent of their total income, amounting to about 25 percent of the mother's wages. (See Table 4) Care for 40 hours per week ranges from between $40 - $60, or $2,000 - $3,000 per year, depending on the type of care used. Similar estimates were found in nationally representative studies, such as the Survey of Income and Program Participation and the Consumer Expenditure Survey. A recent survey reported in USA Today, 1988, found weekly expenditures of $56, or $1.50 per hour. (Hofferth, 1989, p. 9)

Affordability may be a tremendous problem for lower-income families who are paying as much as 25 percent of their family incomes on child care. However, it would seem that 10 percent is not such an onerous amount that it would cause parents difficulty in paying for child care. In the Mathematica study, less than 5 percent said they would prefer alternative arrangements because of cost. The Mathematica study also found that among the 30 percent of parents wanting a different arrangement, most of then wanted to have a more educational focus. In a 1988 national survey (USA Today), 50 percent of those who wanted to change their arrangements mentioned reasons of quality, compared to 19 percent for convenience, and only 3 percent for cost. "Paying for child care" was not listed as the biggest source of stress about child care, rather it was "missing big events in children's lives." Hofferth draws the conclusion that "cost is not the biggest source of stress for parents; rather quality issues are very high on the list." (p. 11) Quality was the number one concern among the Child Care Action Campaign's National Advisory Panel comprised of 500 leaders from business, government, civic groups, media and the child care community.

There is no research suggesting that parents believe one type of care consistently is better than another. Family day care and child care centers offer different things to different children. Although centers are often thought to be more educational -- that is, more likely to have a specific curriculum -- a well-trained family day care provider can provide a program of comparable developmental and intellectual strength. But some children learn better in small groups and only the family day care home would allow those children to benefit from an educational curriculum.

We don't know as much about parents' child care preferences as we do about their choices. A choice is predicated on what is available. If all forms of child care were in ample supply, what would parents choose? The only consistent pattern from which some answer can be provided is that relatives are generally preferred, that home-based settings are preferred for infants and younger children, and that nursery schools, child care centers and other large group settings will be a preferred arrangement for four, five and six year olds. Parents undoubtedly want quality in each of these arrangements when they are used.

There is one important difference between family day care and centers. The former offers a way to address both supply and demand by having a mother care for her own children and people's children at the same time. Family day care offers the possibility for "joint production," which economist Rachel Connelly (1988) defines as "doing two productive things at the same time."

Connelly (1988) presents data showing that 72 percent of child care workers who are self-employed have a child less than 13 years of age. About 49 percent of child care workers who are not self-employed have young children. This difference among the self-employed does not occur in other occupations. It would appear that the source of family day care providers i.e., mothers of young children, may be greater than the supply of younger, childless staff that typically work in centers.

There seem to be rationales and opportunities for growth among centers and family day care homes. Given the increase in demand, shortage of supply and the diversity of needs and preferences among parents and children, it is wise to consider a policy course that allows for the expansion of all types of child care. Yet, family day care has often been considered the step-child of the child care market -- much of it informal and unregulated. Much more attention has been lavished on the child care center, particularly since the advent of employer-supported child care. Yet, there are indications from resource and referral agencies and several innovative employers that family day care expansion may be faster, cheaper, and easier to start. It may solve more efficiently the shortages of care for infants, school-age children, sick children and for parents working part-time, weekends and odd hours. This paper will now explore the specific role of family day care in the child care market and the effectiveness of programs to stimulate its supply.

FAMILY DAY CARE

Nearly half of all children in market child care are in family day care homes. The last careful look at family day care was in 1981 with the National Day Care Home Study. They based many assumptions on an earlier review of family day care included in the National Child Care Consumer Survey (UNCO, Inc.) in 1975. Needless to say, much has changed in the last decade. In 1975, resource and referral (R & R) was still an experiment and employer-supported child care didn't exist. The boomlet occurred and increased the number of infants requiring nonmaternal care. Parents have traditionally shown a preference for family day care over center-based care for children under age three. The Children's Defense Fund estimates that 80 percent of all infant care is provided by home-based providers. (Child Care Fact Sheet, 1987)

According to the National Day Care Home Study (1981), there are three types of family day care which are delineated by their regulatory and administrative structures:

(1) Unregulated care: The largest category consists of those providers who operate outside any regulatory system. They are informal, isolated and often provided by women caring for their own children as well. There were an estimated 1.8 million family day care homes in 1981 serving 5 million children for 10 hours per week or more. These homes had the fewest children: 2.8 children per home.

(2) Regulated care: The earlier cited figures from 1986, indicate that a half million children are cared for in 105,000 regulated homes. The number of independent or sponsored, regulated providers is based on 1981 figures.

(a) Independent: This category consists of caregivers who are regulated (licensed or registered) who meet state and/or federal standards. There were an estimated 115,000 homes serving 304,000 children, or approximately 4 children per home, in 1981. This group represents 6 percent of all family day care homes.

(b) Sponsored: This is the small, but growing group of family day care homes which operate as part of a system or network. They represented only 2 percent of all family day care homes, or 42 percent of regulated care in 1981. This includes 30,000 homes caring for 129,000 children. This group had the highest enrollment: 4.3 children per home. They attribute their high enrollment to increased access to information, agency referral and advertising. These homes are also set up where needed.

The experiences of these sponsored, regulated family day care homes provide insights on the advantages of an organized system of family day care. R & R agencies have based some of their recruitment efforts on those of family day care systems.

A coordinated recruitment effort can have many advantages. Family day care is rarely lucrative. In some communities, where providers know good business practices, offer quality, and are able to sustain full enrollment, they are able to charge substantial fees and make a reasonable income. Unfortunately, there are probably more providers who earn below poverty-level wages for work that involves long hours, stress, and no paid sick or vacation time. As Ellen Galinsky, President of the National Association for the Education of Young Children (NAEYC) says, "When I explain what family day care is, I say, 'Imagine you're having a birthday party for your toddler...and it's going to last ten hours...and you're in charge of it...and you're going to have this party every day of the week.'" (California Child Care Initiative Project, 1988)

In 1981, the average salary of a family day care provider for all children cared for was $3,844 or ($73.92 per week). After subtracting such costs as food, materials and insurance, their net income was $50.27 per week. Hofferth (1987) reports that parents currently pay $39 per week for 30 hours of care. Reports from several cities indicate that:

- In Minneapolis, providers earn $20 per day for babies and $14 per day for toddlers.
- In Albuquerque, providers earn $8-$10/day.

- In Philadelphia, low-income providers earn a maximum of $35 per week, while middle-class providers make $65-$70 per week.
- In the Army, providers, who are typically wives of servicemen, earn $4,000 per year.

The R & R Connection

Some of the problems in family day care could be solved via coordination, either through sponsorship or participation in an R & R network. The National Day Care Home Study recommended a closer link between referral agencies and family day care homes. The report concludes:

> [Referral agencies] serve to disseminate needed day care information throughout the community and by doing so help both parent and caregiver. The parent is assisted both in identifying available homes and in making an informed selection once the home is found. The caregiver obtains greater access to parents in search of child care. This helps her maintain her enrollment levels and thus assures a steady flow of income from caregiving. Further, information and referral centers provide the caregiver with practical advice about running a family day care home, advice typically available only to caregivers affiliated with family day care systems. The opportunities to obtain such positive benefits might well induce many currently unregulated providers to become part of the visible family day care network. (p. 52)

This recommendation was obviously heeded because less than a decade later there are over 300 referral agencies, an estimated 93 percent of which are actively engaged in recruiting family day care homes. (Friedman, 1989) Their efforts respond to the demands of parents for whom care cannot be found. They also meet the requirements of the corporations which offer referral services and are concerned about a child care market that may not accommodate their employees. Referral contracts for most major corporations include a simultaneous commitment to expanding the supply of child care. Firms have come to realize that the effectiveness of the referral program will depend on the adequacy of child care supply.

The California Child Care Initiative Project (CCCIP)

The Project was created in 1985 to address the shortage of licensed quality child care in California communities. Developed by Bank America Foundation and funded by a public-private partnership of 33 organizations (10 public agencies and 23 private funders), the program relies on existing nonprofit R & R agencies to recruit and train family day care providers. Since 1985 when the program began, funders have contributed $3.2 million to the program. Though originally administered by Bank America Foundation, the San Francisco Foundation acts as the fiscal intermediary. The California Child Care Resource and Referral Network, a statewide support group for R & R's, manages the day-to-day activities of the Initiative.

During the initial, year-long pilot project, six R & R's in five California counties successfully tested a process of supply-building (discussed in more detail below). Pilot goals were exceeded by 20 percent with the licensing of over 230 new family day care homes and the start-up of five after-school programs. By the end of the Project's first year, over 1,100 new child care spaces had been created.

During the second year of the Project, the six pilots were funded to continue their efforts and ten more R & R's began a two-year cycle. The agencies again exceeded their goals in the second year. From the beginning of the Project in 1985 through mid-1988, 1,600 licensed family day care homes were created, making available 6,500 new spaces for children. In July, 1988, four more R & R's were added to test the model in rural areas.

An evaluation of one county's success with the Initiative was conducted in 1987. Data were collected for 168 family day care providers who were licensed in Kern County, California during a 14-month period beginning March, 1986. Of these, 67 were providers who had been recruited, trained and licensed through the efforts of the Initiative. The purpose of the study was to find out whether the CCCIP-trained providers were more likely to avail themselves of support services and whether they stayed in business longer. The training program involved at least three hours of training, although most had completed a full 18-hour training workshop.

The study found that CCCIP-trained providers were more likely to have joined the local family day care association, participate in the Child Care Food Program, use book lending services and borrow toys and equipment offered by the R & R, and to seek additional training. They also found that a significantly higher percentage of CCCIP providers were in business at the end of the 14-month study period. (See Tables 5,6)

Mervyn's Department Store

Mervyn's Department Stores, a subsidiary of Dayton-Hudson, headquartered in Hayward, California, committed $3.7 million over four years (1988-1991) to recruit and train family day care providers in fifteen communities in which they have a local presence. The overall goal of the program is to:

- Recruit 2,000 new family day care providers;
- Provide training to 4,000 new or existing family day care providers;
- Link local training efforts to national quality standards by promoting the accreditation and/or credentialling of 900 family providers;
- Develop and implement local consumer awareness campaigns to educate parents on the existence and need for family day care quality standards.

It is too early to evaluate their progress, but a 1986 effort on the part of Mervyn's to test the idea has been completed in Atlanta with promising results. After two years, approximately 68 percent of family day care providers recruited through the effort were still in business. The most prominent reason for turnover was the failure to maintain enough children in care. The evaluation found that there is a need to simplify the paperwork and workshop requirements for participation in the Child Care Food Program; simplify the state's registration process;

and eliminate county and/or city zoning barriers. The study concludes, "The project suggests a clear role for public and private partners, for provider training, and for parent referral and consumer education. Mervyn's has blazed a trail in this community, one both public and private sectors need to follow." (Save the Children, 1988)

I.B.M. and Work/Family Directions, Inc.

In 1984, I.B.M. initiated the first nationwide R & R network through its contract with Work/Family Directions. With continued support from I.B.M. as well as funds from local communities and other corporate clients, Work/Family Directions has helped develop over 55,000 new providers of child care in its major sites (of which 45,000 are new family day care homes) within a five-year period. The corporate focus is significant for its efforts to develop new providers in suburban communities (since most earlier funding was directed at inner-city services.)

Although no formal evaluation of the corporate contracts with Work/Family Directions has been made, their experiences provide important administrative and financial information. About 20 percent of the per employee fee for service is given to local R & R's for recruitment purposes.

Some of the funds are to be used for on-going recruitment in targeted neighborhoods determined by the zip codes of employees or where the supply is known to be lacking. Funds are also to be used to recruit for individual parents who are unable to find what they want in the existing market.

Some communities have very little child care and recruitment efforts make enormous improvements in the availability of care. In New Hampshire, for instance, Ethel McConaghy of Work/Family Directions estimates that recruitment efforts made on behalf of corporate clients have resulted in a 40 percent increase in child care slots. Other communities, such as Minneapolis and Long Island, New York find that the market is saturated and provider rolls increase very slowly.

In a community in Texas, Work/Family Directions found that the $20,000 committed to a one-year recruitment effort led to the creation of 200 spaces in 40 homes. In Danbury, Connecticut, the same amount of money yielded 28 new licensed homes, 40 more on the way to licensure, and 50 possible candidates for the future. Twelve day care centers were stimulated through this recruitment campaign as well.

These efforts indicate that the creation of a family day care home will cost about $500 per home. This generally includes training, registration fees, cardiopulmonary resuscitation, and a $150 equipment stipend. A very similar figure was assessed by the National Day Care Home Study for the costs of supplemental services offered through a family day care association. The costs of supplemental services included provider training, transportation, social services and regulatory functions such as home approval and monitoring. These costs constituted 19 percent of all costs of administering a system of family day care homes.

The Family Day Care Subcommittee of the St. Paul Area Chamber of Commerce Child Care Task Force created a program designed to increase the number of licensed family day care providers by 200 in the greater

St. Paul area. This area has the highest per capita provision of family day care so that recruitment efforts are difficult in such a saturated market. The budget for this recruitment effort was $32,961. According to Tom Copeland of Resources for Child Caring who conducted the recruitment effort, the net increase in the number of family day care homes during the recruitment period was 238. During the 10-month period before the recruitment effort, there was a drop of 104 family day care homes.

The most effective strategies developed in these various recruitment efforts are reviewed below.

Effective Supply Building

Today, with so many programs designed to recruit and train family day care providers, there is rich experience to learn from. Detailed handbooks on supply-building have been published and national associations have been established to help create new programs. However, without centralized organizations and resources to analyze and disseminate what is known, the sharing of knowledge is difficult.

There is consensus on the general principles of effective supply-building: 1) Campaigns must be responsive to the particular needs of specific communities and groups of individuals, and 2) Cooperative coalitions of interested local organizations are vital to success. These principles reflect the character of family day care itself. They also underscore the importance of tailoring supply building campaigns to local needs and resources.

Most of the supply-building efforts conform to the five-step process used by the California Child Care Initiative:

- Assess child care supply and demand, and target specific areas in need of care;
- Recruit individuals with the potential to become licensed family day care providers;
- Train individuals to deliver quality care and effectively manage a small business;
- Provide technical assistance to help them get licensed and operational;
- Provide ongoing support to help them stay in operation.

Various program coordinators for family day care recruitment efforts were interviewed for this paper. They offered a wealth of suggestions for implementation, but continually underscored the fact that different environments and populations will yield different outcomes.

Assessment. Recruiters typically use the records of regulatory agencies to assess and identify providers. If such records have not been tracked, needs can be calculated with Census Bureau Information. The regulatory agencies should be encouraged to collect data.

The California Child Care Initiative identified target areas with high recruitment potential as having:

a) A mix of income groups that could provide a pool of both potential recruits and parent consumers with the ability to pay market rates for child care;

b) An expressed need for child care services, particularly family day care, combined with a shortage of licensed facilities;

c) Proximity to areas with a large and/or growing local or commuter workforce in need of child care services.

Recruitment. It is absolutely essential to know the target population -- who they are, what they need -- to know how to talk to them.

Recruitment is a continuous, ongoing effort. Program coordinators exhort the use of every avenue possible to reach possible providers. Posters, flyers and brochures should be posted in different locales depending on the target market. For instance, in a middle-class neighborhood, private pediatricians' offices, childbirth education classes, and libraries would be covered. In a lower-class neighborhood, pizza parlors, supermarkets, and elementary school community coordinators work well. Tom Copeland of Resources for Child Caring in St. Paul, Minnesota advises addressing the recruitment message to the community at-large rather than to individual providers (e.g., "We need child care;" "It is an important job in a career that offers some benefits;" "Do you know anyone interested in such a job?").

Licensing orientation sessions can attract potential providers already interested in the job. Many programs find that short orientations covering the satisfactions and difficulties of family day care are useful. When the issues are covered realistically, potential providers are able to decide whether or not family day care is a career they wish to pursue. In business, this is known as a "job preview," and is considered instrumental in reducing turnover.

Earnings from family day care are modest. However, the economics can be attractive to two major groups of potential recruits: mothers who want to be at home with their young children, and people who simply like working with children. They need to be shown how family day care allows them to contribute to household income while not spending money on transportation, meals and child care.

Ultimately, word-of-mouth is probably the most useful means of recruitment, but it also takes the longest to show results. Using established providers to attract others can be effective once they overcome resistance to competition. Financial incentives also work.

Media coverage is apparently useful, but its effect seems to be cumulative and is difficult to assess. A program sponsored by the William Penn Fund in Philadelphia reports that media stories took at least a year to produce effective recruitment results. Tutti Sherlock in Rochester, Minnesota (the state with the highest per capita supply of family day care providers in the country) advocates concentrating media efforts within a short time span. Her ideas include: Use Family Day Care Recognition Week, (a statewide effort), like National Secretary Week. Use others to pay for the recruitment effort, e.g., a radio station holds a drawing for a prize to be given to a family day care provider, such as a free dinner at a restaurant; or a florist advertises giving flowers to family day care providers.

Training. Most training for new providers includes:

- Infant cardiopulmonary resuscitation
- First aid
- Health and nutrition
- How to communicate with parents
- Business record-keeping and taxes
- Child development
- Age-appropriate activities

For existing providers, other popular topics include:

- Planning activities for multi-age groups
- Using contracts with parents
- Dealing with provider stress and burnout
- Keeping up with current literature on child development

In general, program coordinators suggest taking training to the providers as much as possible, e.g., schedule training sessions at different hours, day and night, so providers can attend when they're not working; offer child care to providers during training, pay for mileage when sessions are far from home; offer in-home training if necessary (expensive, but also an opportunity to inspect the sites and offer child-proofing and licensure suggestions).

The California Child Care Initiative has collaborated successfully with community colleges to offer accredited training, and in its second year has increased the variety, availability and type of training in order to accommodate more personalized one-on-one training and a broader range of topics such as cooking with children, speech and language development, stress in the family.

Technical Assistance. Many R & R agencies report that "hand-holding," or offering one-on-one assistance during the early stages of recruiting, is their most important function in the process of increasing supply. Providers often need help understanding requirements and completing applications related to state licensing policies and local building codes and zoning ordinances. They may also require assistance passing home inspection, arranging spaces that are attractive and large enough, and in general, coping with the process of becoming a business (even if they choose not to look at their venture in that light).

Licensure generally involves fingerprinting and completing detailed forms that are sometimes forty pages long. Here again, one-on-one assistance is invaluable. Recruits need to have the bureaucratic requirements "translated" and to be reminded of the benefits of regulation, such as protection and the ability to earn more. When the process is long and cumbersome, regulatory requirements can discourage the flow of new providers.

Local business codes are often onerous but necessary for minimum standards of protection for all parties. However, since formalized family day care is a new issue, some policies inappropriately affect providers and need revision. (In Fresno, obtaining a conditional use permit to care for large groups of children requires an environmental impact report, sewer report, and a fee of $1,000.) To increase the supply of providers, R & R agencies must act as advocates, bringing these inappropriate requirements to the attention of regulatory agencies as well as building and zoning officials in order to establish more reasonable procedures.

Ongoing Support. Just getting started in family day care can be intimidating. Providers need sufficient equipment (cribs, potties, toys, fire extinguishers, etc.), which can be expensive, particularly when there are not yet any children to care for. These needs can be met by a variety of means including toy-lending libraries, equipment loan programs, mini-grants to buy equipment, and free start-up kits (first aid and materials for child development activities). The program can buy in bulk, particularly if part of a network or system, or receive donations from local businesses (either supplies or money).

The major reason for leaving family day care in the first year is failure to attract enough children quickly. Several programs note that July and August are good months to start up, since parents are accustomed to thinking in terms of the school year. In Fresno, a traditionally agricultural area, no one seeks child care from the week before Thanksgiving to after Christmas.

Resource and referral agencies often continue contact through conferences and newsletters (with a fresh flow of ideas to the provider, i.e, recipes, songs, finger plays, projects for art, science and other learning).

Special Concerns. Family day care providers are particularly vulnerable to the stresses of isolation combined with responsibility. Ways of overcoming such stress include provider associations (informal groups whereby providers talk about common issues, join together at the playground or on special outings), or provider networks (more formal groups that offer group rates for liability insurance or equipment, or provide substitutes when a provider is unavailable).

A major barrier for unlicensed providers to enter the formal system is financial. Providers are wary of income taxes, as well as strangers intruding in their homes. They need information, such as how to reduce their taxes by keeping records and taking proper deductions. They also need information on the benefits of regulation such as the Food Program and access to toy-lending libraries and equipment loans.

Minorities. Several referral agencies reported significant concerns about urban Hispanic providers, who need more resources and time to meet regulated standards. Language problems make it difficult for them to complete licensing documents and also to communicate with English-speaking parents and children. There are difficulties with education (the courses on basic child development and age-appropriate activities are often too advanced) and culture (many do not understand the need for their homes to meet inspection codes).

In addition, some resist the idea of family day care being a business. They pride themselves in being good mothers and reject efforts to keep records and gain tax advantages or other organizational benefits.

This population is of particular concern because the Census Bureau projects that by 2009, Hispanics will be the nation's largest minority, and if current socioeconomic trends continue, they will be the poorest minority in 1992.

CONCLUSIONS AND POLICY RECOMMENDATIONS

An increase of family day care homes would be desirable for the growing numbers of parents frustrated by the declining availability of relative care, the cost of in-home sitters or nannies, and the dearth and expense of child care centers. They may prefer such arrangements because of the age of their child, preferences for environments, proximity to home and their general flexibility in accommodating change, lateness, and odd-hours.

While analysts debate the shortage of child care, the efforts of several major corporations would suggest that the supply is lacking in specific communities for certain age categories of children at different hours and prices. Literally millions of dollars have been poured into communities around the country to stimulate the supply of child care. The R & R's who often play the coordinating role, are meeting with considerable success in this effort.

Companies are beginning to recognize how quickly and cheaply family day homes can be started. Although day care centers serve more children and tend to last longer, these homes can be established at a significantly lower cost. Employers involved in resource and referral services find that family day care recruitment can increase the success and value of the referral effort and ultimately satisfy a larger number of employees, particularly those with unique child care needs.

Policy recommendations are as follows:

Recommendations

1. **Increase the number of sponsored or coordinated family day care homes.** This might involve increased financial support to R & R agencies to conduct targeted recruiting of homes for referral purposes and for the R & R to serve as an ongoing source of support and association. The relationship can remain informal or move to a more formalized network, depending on the needs and desires of providers in that community. Most critical, however, is the ongoing support provided to new family day care homes. R & R agencies may feel that this creates a conflict of interest, since their primary responsibility is to parents. Once a group of family day care homes becomes more formally associated, another agency can maintain the network. Financial support should also be provided for any agency with responsibility for creating and maintaining family day care associations.
2. **The IRS should allow family day care providers certain allowances in the reporting of their income.** Senator Hatch has proposed to exempt the Social Security portion of their checks. Not only is the amount of money saved very low, but

the provider does not pay into the Social Security system during the period of providing care.

3. **Streamline reporting requirements** so as not to create onerous burdens on providers or discourage their participation in certain federal programs, such as the Child Care Food Program.

4. **Do not require parents to submit provider social security numbers in order to receive tax advantages**. Recent changes in the IRS code require parents to submit the Social Security number of their provider in order to obtain the Federal Dependent Care Tax credit or pre-tax dollars in their employer's Dependent Care Assistance Plan (DCAP) that is part of a flexible benefits plan. This provision puts an unnecessary policing responsibility on parents, and may drive providers to go underground. The ruling should be changed to give some other entity the responsibility for identifying providers and bringing them into the regulatory system.

5. **Develop a federal matching program that would replicate portions of the Child Care Initiative Project nationally.** This might be called the Recruitment and Access Partnership (RAP) whose purpose is to link supply building with the R & R community. The government would offer matching grants to corporations willing to invest in the expansion of child care services. This would require an RFP process that

companies, in conjunction with R & R's, would pursue for their communities.

While larger companies have been in the forefront of providing child care support, a growing number of smaller and mid-size firms have become involved. Furthermore, shortages of workers for entry level positions are growing. Employers of low-wage workers increasingly rely on child care support to attract labor in short supply. While financial assistance may be necessary for some parents to take advantage of services created by the RAP program, there are many who would be willing and able to pay for better quality care for their children.

Using figures from the Mathematica Policy Research study, a one-third increase in family day care would be required to accommodate preferences and new babies. Based on other projections, that would mean an increase of about 30,000 family day care homes. At $500 per home, the cost of creating this many new, licensed homes would be $15 million. If 50 percent of it were provided by corporations, the price tag to the government would be less than $8 million. Additional amounts might need to be raised to cover administrative costs and support to the referral agencies responsible for this build-up.

6. **No federal policy should address supply without addressing affordability, and no affordability initiative should begin without attention to supply.** It is clear from economic analyses as well as practical experience that there are some parents who cannot afford the care they want for their children. There are other parents who may not find the care they want no matter how much they are willing to spend. There are many steps to assuring an adequate child care market. As is very clear in the example of family day care, there are administrative costs for recruitment, costs for getting homes into compliance, and other costs for maintaining homes to reduce turnover. These are not costs that parents assume, in part, because they are associated with start-up and infrastructure costs.

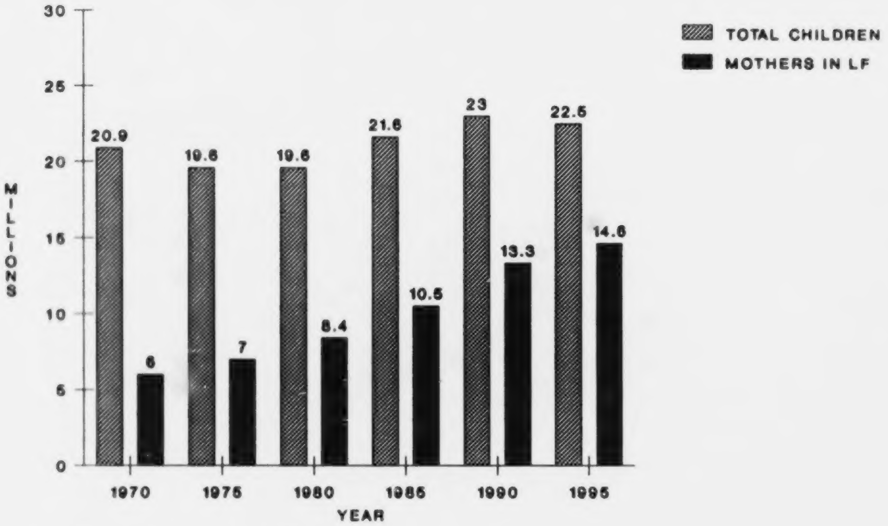
Any discussion of tax credits or family allowances for parents should be part of a larger effort to improve the match between supply and demand and the overall efficiency of the child care market.

TABLE 1 : Difficulty Finding Child Care

(Percent of Parents Reporting Difficulty Finding Child Care)

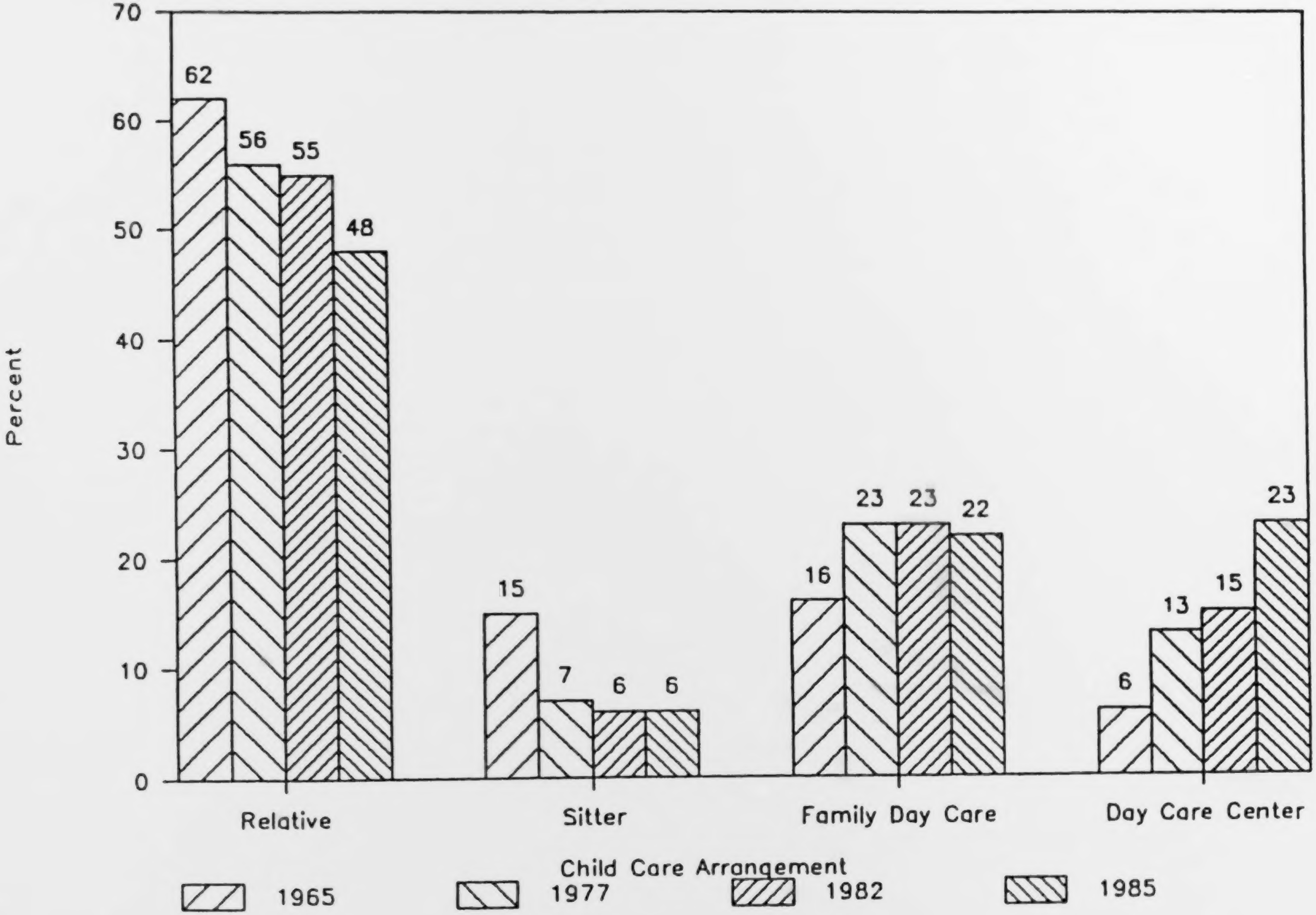
	% of Parents Reporting Difficulty
Sister of Providence Hospitals	64%
3 New Jersey Firms	54%
Large NE Pharmaceutical Firm	50%
33-Company Survey, Oregon	46%
Large, Midwest Insurance Company	36%
Large, East Coast Computer Company	30%

TABLE 2
PRESCHOOL CHILDREN WITH MOTHERS IN THE LABOR FORCE (LF), 1970-1995



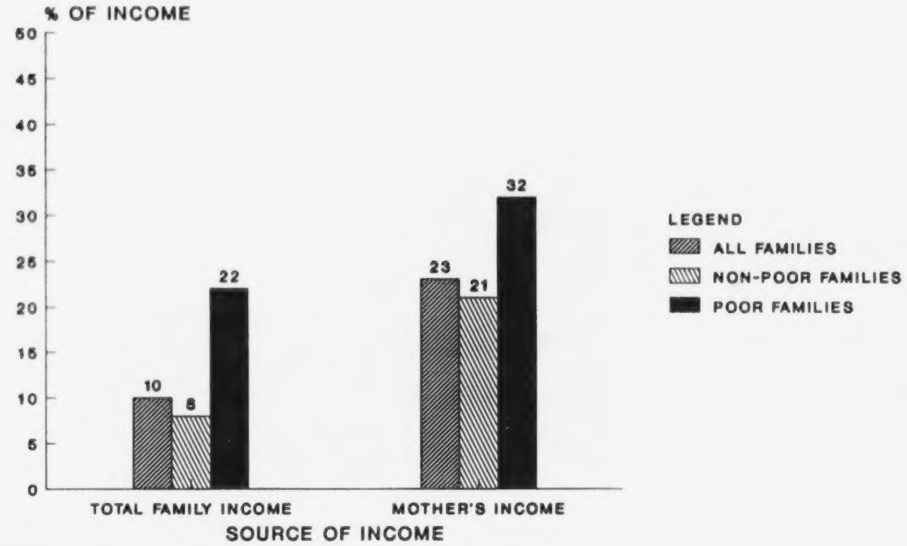
SOURCE: HOFFERTH, S. "THE CURRENT CHILD CARE DEBATE IN CONTEXT", BETHESDA, MD: NICHD, MAY, 1988

Care of Preschool Children, 1965–1985



SOURCE: Hofferth, Sandra L., "What is the Demand for and Supply of Child Care in the U.S.?, (Testimony before the House Committee on Education and Labor) February 9, 1989, The Urban Institute: Washington, D.C.

TABLE 4
AVERAGE WEEKLY EXPENDITURES ON CHILD CARE AS A PERCENT OF INCOME



SOURCE: HOFFERTH, S. "THE CURRENT CHILD CARE DEBATE IN CONTEXT", BETHESDA, MD: NICHD, MAY, 1988

TABLES 5, 6: California Child Care Initiative Project (CCCIP)

Table 5. Comparison of CCCIP and non CCCIP providers' participation in support services.

	CCCIP	Non-CCCIP
Family Day Care Association	31%**	2%
Child Care Food Program	45%*	22%
Resource Library (books)	36%**	4%
Toy Loan	33%**	6%
Additional Training	25%**	0%

* p .001

** p .0001

Table 6. Status of CCCIP and Non-CCCIP providers at end of 14-month study period

	CCCIP (N=67)	Non-CCCIP N=101)
Active (providing child care)	87%	73%

* p<.05

REFERENCES

American Federation of State, County and Municipal Employees (1988). *Public Opinions Polls: Child Care and Parental Leave*. AFSCME: Washington, D.C.

California Child Care Initiative Project (1988). California Resource and Referral Network: San Francisco.

California Child Care Initiative: Year Two Report (1988). California Child Care Resource and Referral Network: San Francisco, CA.

California Child Care Initiative: Year-End Report (1987). California Child Care Resource and Referral Network: San Francisco, CA.

Connelly, Rachel (1988). *The Barriers to Increasing the Supply of Quality Affordable Child Care*. Paper presented to Child Care Action Campaign Workshop on Economic Implications of Child Care. CCAC: New York.

Copeland, Tom and Roach, Megan (1986). *Successful Strategies for Recruiting Family Day Care Providers*. Toys 'N Things Press: St. Paul, MN.

Divine-Hawkins, Patricia (1981). *Family Day Care in the United States: National Day Care Home Study Executive Summary*. DHHS Publication No. 80-30287. Department of Health and Human Services: Washington, D.C.

Donohue, W. Anthony (1988). *Family Child Care Systems in the United States Army: Summary of Findings*. University of Minnesota.

Emlen, Arthur C. , Koren, Paul E. , Louise, Dianne (1987). *1987 Dependent Care Survey: Sisters of Providence, Final Report*.

Regional Research Institute for Human Services, Portland State University Portland, OR.

Evans, Gloria (1988). The Care Package - A Family Day Care System Replication. Child Care Assurance Plan: Norfolk, VA.

Family Day Care: An Option for Rural Communities (1984). Save the Children: Atlanta, GA.

Fischer, Jan Lockwood (1987). California Child Care Initiative Project Training at the Kern County Pilot Site: Initial Outcomes. Community Connections for Child Care: Bakersfield, CA.

Galinsky, Ellen and Hughes, Diane (1987). The Fortune Magazine Child Care Study. (Unpublished paper) Bank Street College of Education: New York.

Galinsky, Ellen (1987). The Impact of Child Care Problem on Parents on the Job and at Home. (Unpublished paper) Bank Street College of Education: New York.

Hofferth, Sandra L. (1989). What is the Demand for and Supply of Child Care in the U.S.? (Testimony presented before the House Committee on Education and Labor). Urban Institute: Washington, D.C.

Hofferth, Sandra L. and Phillips, Deborah A. (August, 1987). Child Care in the United States, 1970-1995. Journal of Marriage and the Family (49) pp. 559-571.

Kisker, Ellen Eliason; Maynard, Rebecca; Gordon, Anne; and Strain, Margaret (1989). The Child Care Challenge: What Parents Need and What is Available in Three Metropolitan Areas. Mathematica Policy Research, Inc. Princeton, NJ

National Association for the Education of Young Children (NAEYC) (1986). *The Child Care Boom: Growth in Licensed Child Care From 1977 to 1985*. NAEYC: Washington, D.C.

O'Connell, Martin and Bacher, Amaru (1987). *Who's Minding the Kids? Child Care Arrangements: Winter 1984-85*. U.S. Bureau of the Census, Current Population Reports, Series P-20, No. 9.

Perreault, Joe (1987). *Recruiting Family Day Care Providers*. Save the Children: Atlanta, GA.

Phillips, Deborah (ed.) (1987). *Quality in Child Care: What Does Research Tell Us?* National Association for the Education of Young Children: Washington, D.C.

Prosser, William R. (1986). *Day Care Centers: 1976-1984*. Social Services Policy Technical Analysis Paper. U.S. Department of Health and Human Services: Washington, D.C.

Reisman, Barbara, Moore, Amy T. , and Fitzgerald, Karen (1988). *Child Care: The Bottom Line*. Child Care Action Campaign: New York.

Save the Children/Child Care Solutions (1988). *Final Report The Child Care Outreach Project* (Funded by Mervyn's Department Stores). Save the Children: Atlanta, GA.

St. Paul Area Chamber of Commerce (1987). *Child Care Task Force Family Day Care Subcommittee Preliminary Report*. St. Paul, MN.

Why People Become Family Day Care Providers? (1986). Save the Children: Atlanta, GA.

Zigler, Edward F. and Gordon, Edmund W. (eds.) (1982). *Day Care: Scientific and Social Policy Issues*. Auburn House Publishing Company: Boston, MA.

29a. PART-TIME AND TEMPORARY WORK

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29a. PART-TIME AND TEMPORARY WORK

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In 1987, over 18 percent of all workers worked part-time, including 27 percent of all female workers and 11 percent of all male workers. Furthermore, the percent of part-time workers has been increasing over time, growing from 11.5 percent of the labor force in 1955. Of course, given the overall growth in employment in this country, increases in the percent working part-time imply very large increases in the number of part-time jobs -- from 6 million in 1955 to 19 million in 1987.[1] These changes indicate the importance of understanding the role of part-time work in the U.S. labor market, both for employers as well as for workers.

This paper is designed to analyze what we do and do not know about part-time work. The first section reviews the trends in part-time work, and discusses who works part-time and in which jobs. The second section discusses the decision to use part-time workers from the employer's perspective. The third section discusses differences in compensation between full-time and part-time workers. The fourth section discusses the well-being and income levels of households with part-time workers. The fifth section focuses on three major policy issues relating to the current nature of part-time work in the U.S. labor market. The sixth section summarizes and highlights four research areas where our knowledge regarding part-time work and its impact is inadequate.

I. DESCRIBING THE PART-TIME LABOR MARKET

a. Defining Part-time Work

Part-time work is officially defined by the Department of Labor as regular employment involving less than 35 hours of work per week. Individuals who indicate they work part-time are asked to identify their reasons for part-time work. Some indicate they are only looking for part-time work, categorized as "voluntary part-time workers." Others indicate that they are working part-time for economic reasons, because they could only find a part-time job or because of slack work or material shortages. These workers are considered "involuntary part-time workers."[2] At times it is also useful to distinguish between part-time workers (those currently employed on a part-time job), and the part-time labor force, including the unemployed who seek part-time work (Nardone, 1986).

The cutoff at 35 hours for part-time workers has been used since the mid-1940s and there is at present little indication that this cutoff is inappropriate. The number of individuals who consider themselves working full-time, but whose hours are less than 35, is small. Analysis of the jobs held by workers who work 30-34 hours indicates that they are more similar to the jobs held by 25-29 hour workers than to the jobs held by 35-39 hour workers (Hedges and Gallogly, 1977). There has also been little change in the average hours per week worked by full-time workers, which has remained at around 43 for the past two decades.[3]

An additional question often arises as to how part-time work relates to part-year work, usually defined as working less than 50 weeks per year. Research has indicated that there are significant differences between the part-time and the part-year workforces (Blank, 1988). In addition, it has been noted that while part-time work has increased, part-year work has decreased in recent years. However, it is true that part-time workers are more likely than full-time workers to work only part-year (Mellor and Parks, 1988).

b. Trends in Part-time Work

The number of part-time workers in the 1950s and 1960s grew faster than the number of full-time workers, expanding the share of part-timers in the labor force. Part of this shift was due to expansions in the supply of part-time workers, as a growing number of teenagers and married women entered the labor market, both groups that were more likely to seek part-time jobs. There has also been a growing propensity for workers over 65 to work part-time. At the same time, the demand for part-time workers has also expanded as the retail and service sectors have grown, both of which rely more heavily on part-time jobs (Stein and Meredith, 1960; Holland, 1966; Deutermann and Brown, 1978). It is virtually impossible to separate the impact of increased supply versus increased demand in the growth of part-time work. Both have occurred simultaneously and each has almost surely stimulated further change in the other.

The growth in part-time work slowed down somewhat in the 1970s and 1980s. Figures 1 and 2 plot the percent of part-time workers among all female and male non-agricultural workers between 1968 and 1987.[4] The percent of female workers in part-time jobs is virtually constant over this time period, varying around 27 percent. The percent of the male workers in part-time jobs is rising.[5]

Figures 1 and 2 also plot the percent of all non-agricultural workers who are voluntary part-time workers. The distance between this line and the total percent part-time is the percent of involuntary part-time workers. As the figures make clear, the percent of involuntary part-time workers has been rising among both men and women, and is far more cyclical than the percent of voluntary part-timers. Increases in involuntary part-time work tend to lead movements in the unemployment rate, as firms cut back on hours before they lay off workers (Bednarzik, 1975).

If one regresses the percent of workers in voluntary and involuntary part-time employment against the unemployment rate, a time trend, and a constant, both the percent of voluntary and involuntary part-time work increases with the unemployment rate, although the impact of unemployment on involuntary part-time work is much larger. In addition, even after changes in unemployment are controlled for, there remains an underlying positive time trend in the percent of workers in involuntary part-time work over the past two decades. Essentially, the share of involuntary part-time workers has increased in each recession, and then declined, but each time does not quite return to its pre-recession level. While this trend has been much discussed, the reasons behind it have not been seriously investigated and are not understood. Among men, voluntary part-time work also shows a positive time trend. Among women, once the unemployment rate is controlled for, voluntary part-time work shows a declining trend (Bednarzik, 1975; Ichniowski and Preston, 1986; Blank, 1989a).

While the percent of teenagers in the labor market has declined during the past two decades, the percent of teens working part-time has risen. These two effects have almost completely offset each other over the past two decades, so there is little net change in the percent of jobs filled by part-time teenage workers.

In short, the continuing overall increase in the number of part-time workers over the past two decades is due to a combination of two factors, the increase in part-time work among men and the increase in the percent of the labor force composed of women, who have a higher propensity to work part-time. Much of the increase in men's part-time work is the result of an increase in involuntary part-time employment. The percentage of workers in part-time jobs varies over the business cycle, but has an underlying upward trend. In recent years, the percentage of workers in part-time jobs has actually declined slightly as we have recovered from the deep recession of the early 1980s.

c. Who Are the Current Part-time Workers?

Part-time workers are disproportionately likely to be teenagers, women with younger children, and workers over the age of 65. In fact, among teens and elderly workers, over half are employed part-time. This results in a very heterogeneous group of part-time workers; the labor market issues of concern to teenagers are likely to be quite different from those of concern to elderly part-timers, and also different from those facing women with children.

Part-time workers are disproportionately in retail and service occupations. They are less likely to be in professional and managerial positions, and they are also less likely to be in blue collar positions

(Leon and Bednarzik, 1978; Blank, 1989a). Part-time workers are also more likely to be in sex-segregated jobs (Holden and Hansen, 1987).

Compared to voluntary part-time workers, involuntary part-time workers are more likely to be male, teens, black, and lower-skilled (Bednarzik, 1975; Bednarzik, 1983; Shank, 1986). There are also differences among involuntary part-time workers, depending on the reason for such work (Terry, 1981; Bednarzik, 1983).

Part-time workers are much more likely to work non-daytime, non-weekday schedules than are full-time workers. While only 16 percent of full-time workers regularly work outside a weekday day shift, fully 49 percent of part-timers do so (Mellor, 1986). Teens are more likely than other part-time workers to work nonstandard shifts (Smith, 1986). Women with children are more likely to be off work in the late afternoons (Owen, 1978).

Part-time workers also have generally shorter job tenure. The propensity to leave part-time work is high, either to move out of the labor market, or to move into full-time work (Long and Jones, 1981; Moen, 1985). There is very little research on the dynamics of part-time work over a worker's lifetime. Preliminary current work indicates that part-time work among adult women is only rarely used as a stepping stone between non-employment and full-time employment, but is instead used as either an alternative to full-time employment, or as an alternative to non-employment (Blank, 1989b).

A growing research literature in economics is concerned with estimating labor supply choices that include a part-time work option. These papers use multi-variable regression techniques to estimate the effect of a range of variables on the probability of choosing part-time versus full-time jobs (Morgenstern and Hamovitch, 1976; Nakamura and Nakamura, 1983; Simpson, 1986.) These estimates have also been extended to include a third labor market choice, namely non-employment. Simple statistical procedures can estimate the probability of having desired hours that are below zero (non-employed), between zero and 34 (part-time) and greater than 34 (full-time) (Long and Jones, 1980). More recent work indicates that the determinants of labor force participation differ from the determinants of part-time versus full-time work and thus these two equations should be separately estimated (Blank, 1989a).

Most of this work produces similar results, although the data and the time periods differ. Among workers, women with younger children and more children are more likely to work part-time, while non-whites are more likely to work full-time. Women whose spouse earns more, or who have larger amounts of non-earned household income are more likely to work part-time.

Only one study has separated voluntary part-time workers from involuntary part-time workers. Sundt (1988) estimates a joint model of desired and actual hours of work, allowing the actual hours of unemployed and involuntary part-timers to differ from their desired hours. She finds, consistent with raw data tabulations, that younger, lower educated and non-white workers are more likely to be involuntarily working part-time. The determinants of involuntary part-time work are very similar to the determinants of unemployment.

Overall, these estimated labor supply equations reinforce the conclusions from less statistically sophisticated studies. Part-time workers are a clearly distinguishable group of workers, whose personal and household characteristics provide explicit reasons for working fewer hours. In addition, the potential importance of differentiating involuntary from voluntary part-timers is underscored.

II. EMPLOYERS' USE OF PART-TIME WORKERS

a. How Do Firms Decide Whether to Use Part-time Workers?

Firms can hire a given number of person-hours in a variety of ways, using combinations of part-time and full-time workers. The choice of employment patterns must depend upon the technological demands of firm production, the availability of workers willing to work certain hours, and the relative costs of employing workers on different hourly schedules.

Very little research is available that investigates part-time work from an establishment perspective. The most comprehensive survey was conducted by Nollen, Eddy, and Martin (1978) in 1976 and interviewed 68 firms about their use (or nonuse) of part-time workers. The Bureau of National Affairs (BNA) has also conducted a survey of 223 of its members (BNA, 1988). Other firm surveys with information on part-time workers exist (Daski, 1974; Montgomery, 1988b; Tilly, 1988). Both Nollen et al., and the BNA conclude that the primary reason firms hire part-time workers is to resolve scheduling problems. Firms with high weekly and daily variance in workload were most likely to employ part-time workers. With far less frequency, firms also indicated they occasionally hired part-time workers because of an inability to recruit full-time, to avoid fringe benefit payments, to avoid layoffs, or to retain valued employees. Both studies conclude that firms appear to do little analysis of the overall economic benefits and costs of part-time versus full-time workers; their strategy is to hire full-time, unless there are scheduling problems that part-time workers appear to solve. These surveys also indicate that it is larger, less unionized firms, in retail trade, finance, and service industries, with high percentages of clerical and service workers who are most likely to employ part-time workers.

The use of part-time work is also highly correlated with the growing use of contingent workers over the past decade. Part-time workers are typically considered one subgroup in the more broadly defined category of contingent workers, which also includes temporary workers (who may be part-time or full-time.) The movement toward greater contingent employment is clearly related to underlying trends in the macroeconomy, as well as to technological changes in the workplace (U.S. Department of Labor, 1988b).

In contrast to research which focuses on direct survey questions asking firms to identify why they hire part-time workers, the economics literature contains a variety of studies that attempt to estimate the determinants of part-time employment within a firm. Theories of employment demand emphasize the role of quasi-fixed labor costs (such as hiring and training costs) in determining the number of workers hired (Oi, 1962). Several papers have extended these models to encompass part-time and full-time employment choices (Owen, 1979; Montgomery, 1988b). Both the quasi-fixed costs associated with hiring a worker, as well as the hourly compensation differential between part-time and full-time workers will affect the part-time/full-time mix in the firm. Regression analysis estimating the determinants of the share of part-time employment within firms finds that it is sensitive to the part-time/full-time wage differential (Owen, 1979; Ehrenberg et al., 1988), as well as to measures of training and hiring costs (Montgomery, 1988b). These estimates also confirm the survey results indicating that firms which use more part-timers are more likely to be in service industries and to be less capital intensive.

More recent work has also recognized that when the relative price of labor changes there may be both employment and hours effects; i.e., firms can employ a different mix of part-time and full-time workers and they can also employ existing part-time and full-time workers for longer or shorter hours. Increases in fixed costs per worker, for instance, should decrease the number of part-time workers as well as increase the hours worked by existing part-timers (Fitzroy and Hart, 1986). Montgomery (1988a) finds that hours among part-timers are responsive to training costs, size of firm, and relative wage differentials.

Fringe benefit differences between part-time and full-time workers may also significantly affect their relative costs. This is an increasingly important issue as the share of fringe benefits in total compensation has been rising in the United States (Woodbury, 1983). Statutory fringe benefits, such as Social Security, Unemployment Compensation, Disability Insurance, and Workers' Compensation payments typically require a firm to make contributions based on a share of each worker's salary up to a maximum salary level. This increases the relative cost of part-time workers since their entire salary is usually subject to such taxes (Nollen et al., 1978). Other forms of fringe benefits, such as vacation pay, pensions, and health insurance, may or may not affect relative part-time/full-time costs. If part-timers are excluded from major fringe benefits, then they may have lower fringe costs than full-time workers. If fringes are pro-rated to hours and wages, there may be no part-time/full-time differential. If part-time workers are provided with the same fringes as full-time workers, they will have higher relative costs.

We have virtually no information on the extent to which fringe benefit costs affect the use of part-time workers. The only available estimates indicate that greater fringe benefit coverage for part-time workers is positively correlated with greater use of part-time workers, a seemingly perverse effect (Ehrenberg et al., 1988). However, the information available on fringe benefits is extremely limited in this study.

b. What Are the Advantages and Disadvantages of Using Part-time Workers?

Given a firm has decided to hire part-time workers (probably because of scheduling needs), how is the performance of those workers evaluated? While the standard image of a part-time worker may be that he or she is less stable and less reliable, this does not appear to be the experience of firms who employ these workers. Firms that use part-time workers tend to indicate that there is less absenteeism and less turnover among them than among full-time workers (Nollen et al., 1978; Ronen, 1984; Barnett, 1984). The suggestion is often made that part-time workers take fewer breaks and less personal time while on the job, and there is some evidence to support this (Mintz, 1978). Firms using part-time workers provide much more positive evaluations of their job performance than firms which don't use them, although this may merely reflect underlying differences in these firms' technology.

Firms which use part-time workers list their disadvantages as additional administrative record keeping, training and supervision problems (especially when part-timers do not work standard hours), and lack of promotability. Part-timers are also considered particularly unsuitable for jobs involving coordinational or managerial tasks. Overall, employers generally indicate part-time workers are best suited for jobs involving discrete tasks that are necessary to meet peak demand problems (Nollen et al., 1978; Owen, 1979; BNA, 1988).

This perspective on part-time work is in conflict with the efforts of groups like the Association of Part-time Professionals to expand the image of part-time work. "Permanent, professional part-timer" is still a contradiction in terms for many employers. Efforts to promote a more expanded image of the role of part-time employees include Kahne's work on "new concept" part-time jobs (Kahne, 1985) and Applebaum's call for a restructuring of part-time work (Applebaum, 1986). A recent survey of 31 firms by Tilly (1988) identified a few employers who used selected part-timers in an expanded role. He distinguishes between "secondary" part-timers, members of the secondary labor force in low-wage jobs with few career opportunities, and "retention" part-timers, typically highly skilled and committed workers once employed full-time who are switched into part-time work in order to prevent them from leaving the firm (often women with young children). However, while some firms may treat certain part-time workers as skilled and permanent employees, the vast majority of employers do not appear to view their part-time workers in this way.

III. COMPENSATION FOR PART-TIME WORK

While the evidence indicates that it is scheduling and not compensation issues that determine whether employers hire part-time workers, nonetheless a great deal of attention has been paid in the economics literature to part-time and full-time compensation differentials. There are a number of reasons for this. First, from the worker's point of view, the attractiveness of part-time work may be heavily influenced by the compensation involved. Second, by trying to understand how and why part-time compensation differs from full-time compensation, we may better understand the nature of part-time jobs.

The standard wisdom is that part-time jobs pay less than full-time jobs, and virtually all of the evidence supports this conclusion. Every comparison of average part-time and full-time wages shows negative part-time differentials. It is clear that part-time jobs are disproportionately lower-wage jobs; among all individuals working at the minimum wage, 65 percent of them were part-time workers in 1986 (Mellor, 1987; Levitan and Conway, 1988). However, these simple comparisons ignore several issues. First, on average, part-time workers are typically younger, less skilled and less experienced than full-time workers. This implies that some of the part-time/full-time differential has nothing to do with part-time work per se, but relates to the human capital characteristics of the workers. For instance, because teenagers compose such a large percentage of the part-time labor force, the average part-time/full-time wage differential for all workers is much larger than it is among adult workers only. Second, part-time jobs are often concentrated in low-wage industries and occupations. Full-time workers in these areas typically receive lower wages as well. While these lower wages may be a concern, they are again not the result of part-time work, per se.

Because of these concerns, researchers have attempted to estimate the effect of part-time work on wages using multi-variable regressions that control for individual skills and (in some cases) job characteristics. Some researchers assume the effect of part-time work is simply to shift the average level of wages downward, equivalent to including a dummy variable in a wage regression (Ehrenberg et al., 1988); others estimate entirely separate wage regressions for part-time and full-time workers, allowing all the determinants of wages to vary (Owen, 1979; Long and Jones, 1981). Ehrenberg et al. estimate wage equations for workers in 44 separate industries and find significant negative part-time effects in 40 of them. Owen finds that almost half of the raw part-time/full-time differential is due to individual human capital differences among workers; Long and Jones estimate 30 percent of the raw differential is due to individual differences among workers, and another 55 percent is due to the industry and occupational location of the workers. All of these studies find significant negative part-time differentials even after accounting for individual and job characteristics.

More recent work has included an adjustment for individual selection into part-time or full-time work as part of the wage estimates. If there are particular characteristics of workers which both make them more likely to work part-time and which also lower their wage rate, then estimating wages without taking account of the fact that certain workers have explicitly chosen part-time work will overestimate the part-time/full-time wage differential[6] (Nakamura and Nakamura, 1983; Simpson, 1986, Gordon, 1987; Main, 1987). The effect of this correction differs across the samples. Nakamura and Nakamura and Gordon both find this correction is important, while Simpson (using Canadian data) and Main (using British data) find that it is not. Results as to the importance of individual characteristics are similar to those cited above. For instance, Main finds that half of the part-time/full-time difference in his British data is due to human capital differences among the workers. Simpson finds that as much as two-thirds of the differential in his 1981 Canadian data is due to individual differences between workers.

Blank (1989a) has attempted to account even more fully for the self-selection of women into particular labor market slots. She estimates wages on part-time and full-time jobs, conditional upon both choosing to be in the labor market at all, as well as choosing to work part-time or full-time. With this fuller selectivity adjustment, her results are notably different from earlier studies: the impact of part-time work on wages becomes insignificant or positive (especially in professional and managerial jobs). These estimates, based on 1987 Current Population Survey (CPS) data on women, have been duplicated on similar data for 1983. In this earlier year, part-time wages are lower in a few occupations (primarily service and sales), but are again higher for professional and managerial workers. These results indicate the important role that selection into part-time work (heavily determined by household demographics, particularly children) has on the wages these women receive. In addition, Blank's study of wages explicitly includes information on involuntary part-time workers in the wage regressions. She finds that involuntary part-timers receive lower wages than voluntary part-timers even after personal and job-related characteristics are accounted for.

Separate estimation of part-time/full-time wage equations allows the wage effects of such characteristics as education and experience to differ between the two groups of workers. It is often assumed that part-time work offers lower returns to human capital investments. Interestingly, most of the research cited above shows no difference in the returns to education between part-time and full-time workers[7]. However, virtually all of the studies find that worker age (a proxy for experience in much of this research) or actual worker experience (when available) has a lower return for part-time workers. Several researchers have gone beyond investigating the effect of total past experience on current wages, and utilized data sources that allow them to include information on past involvement in part-time versus full-time work (Jones and Long, 1979; Corcoran et al., 1983; Sundt, 1987). All of these studies uniformly conclude that past spells of part-time work have no positive effect on current wages (for part-time or full-time workers), while past spells of full-time work clearly increase current wages. In a similar manner, part-time workers receive little "rebound" effect on their wages when re-entering the work force after a period of absence, while full-time workers' wages will recover quite rapidly from the effects of a period of non-employment (Sundt, 1987).

Total compensation includes fringe benefits as well as wages. As noted above, fringes are an increasing share of the compensation package of most firms. All evidence indicates that part-time workers unambiguously receive lower fringes. This evidence ranges from employer survey data (BNA, 1988), to tabulations of worker-reported data (Conway, 1988; Blank, 1989a), to multivariate regressions estimating the likelihood of receiving particular fringe benefits (Ichniowski and Preston, 1985; Ehrenberg et al., 1988), to full selectivity-corrected models (Blank, 1989a)[8]. It should be noted that much of this research focuses on very limited and poorly defined fringe benefit measures (the Current Population Survey only asks if workers are covered by a pension plan and if they are covered by a health plan on their primary job.) However, it appears that employers are far more likely to completely exclude part-time workers from fringe benefit plans than to include them in some pro-rated fashion. In general, most fringe benefits are received by only about half as many part-time workers as full-time workers.[9]

While the evidence seems overwhelming that part-time workers are paid less in terms of total wage and fringe compensation than full-time workers, realize that this evidence ignores a large number of non-wage issues regarding the potential advantages of part-time work. There is virtually no information on the extent to which part-time workers value the shorter hours, more flexible hours, or simpler set of work tasks that part-time work often involves. The heavy use of part-time work among individuals who have important non-labor market commitments (teenagers in school, women with children) may well indicate that these non-wage advantages compensate for the wage differentials.

IV. HOUSEHOLD WELL-BEING AMONG PART-TIME WORKERS

There is an ongoing concern among many observers of the labor market that part-time work is a policy problem, and that part-time jobs create hardship for those in them (Nine to Five, 1986; Conway, 1988). The low compensation received by part-time workers and their lack of protection through fringe benefits is consistent with this perspective. However, whether part-time work represents a problem or a positive labor market choice depends largely on the household situation of part-time workers. Many teenage and married female part-time workers are in households in which there are other household members working full-time. This does not imply that the labor market situation of these part-time workers is unimportant, since some of these workers may provide an important supplement to household income with their earnings. However, many part-time workers may focus more on the non-wage advantages of part-time jobs rather than on their financial implications.

In contrast, the evidence indicating particularly low compensation among involuntary part-time employees, whose hours of work are clearly constrained, may be a serious concern indeed. And even among those workers who indicate that they were only seeking part-time work, there may be some individuals who face serious hours constraints. For instance, lack of adequate child care, transportation difficulties, or health problems on the part of the household head can lead to "voluntary" part-time work that results in inadequate household income. Particularly among women heading households with young children, the lack of health insurance, life insurance, or pension coverage in part-time work may create long-term problems. While there is no research that explicitly addresses the question of "when does part-time work cause household distress?", there are bits of evidence that can be brought to bear upon this issue.

In the mid-1980s 20 percent of all part-time workers were household heads. These were primarily single women with young children, young single individuals, and elderly workers. Part-time workers were disproportionately likely to be poor, especially involuntary part-timers. More than 1/3 of all households containing an involuntary part-time worker also received some type of government transfer assistance (Nine to Five, 1986; Levitan and Conway, 1988).

One of the main determinants of part-time work for women with children is the availability of child-care arrangements. Evidence indicates that this is a serious constraint for many. In a survey from the late 1970s, fully 23.5 percent of all part-time working women with children indicated that they would work more if they could find child care (Presser and Baldwin, 1980). In part, this is a statement about low part-time wages (at a high enough price, child care can almost always be purchased.)

Another indicator of "problem" part-time work is the extent of multiple job-holding among part-time workers. People holding multiple part-time jobs are typically women. (Men who hold multiple jobs tend to have one full-time and one part-time job). Multiple part-time job holders are likely to include at least one job which is involuntarily part-time (Applebaum, 1986; Levitan and Conway, 1988).

All of these facts do not fit together neatly. But there is evidence here that at least some sub-group of part-time workers are experiencing serious household income shortfalls, although the exact size and significance of this problem is not known. A disproportionate number of these workers are surely working part-time because of inadequate labor market demand. But even among the voluntary part-timers, there may be exogenous constraints that prevent greater work effort and which result in family hardship. Our understanding of the advantages and disadvantages of part-time work would benefit by closer research attention to the correlations between part-time work and household income adequacy.

V. POLICY ISSUES FOR PART-TIME WORKERS

This section identifies three explicit policy concerns which arise out of the previous discussion of the nature of part-time work. However, before turning to these issues, it may be useful to make some prefatory remarks on the difficulty of focusing any policy discussion on the compensation differentials between part-time and full-time jobs, per se.

A great deal of the public discussion on part-time jobs focuses on the differences in average compensation between part-time and full-time work. Lower part-time wages and fringes are generally decried by many observers of part-time work (Nine to Five, 1986; Applebaum, 1986). However, of all the policy issues relating to part-time work, focus on compensation differences alone may not effectively characterize the underlying policy issues.

First, as noted above, some large amount of the part-time/full-time wage differential is clearly due to the different skills and experience levels of part-time workers and to the occupational location of part-time jobs. Thus, the simple comparisons of part-time/full-time wages often made in public discussions tend to overstate the differentials. However, continuing differences occur even after these issues are accounted for.

Second, as noted above, it seems that certain part-time workers may not be seriously disadvantaged in terms of wages. Among professional and managerial employees who select part-time work, there is evidence they may earn even more than their full-time co-workers. Many of these workers are likely to be previous full-time employees who have switched to a part-time job during a period when other family or personal involvements limit their labor market commitment. Yet, instead of leaving the labor market entirely, they choose to remain as part-timers, indicating their strong career orientation as well as the desire of firms to retain their skills and experience.

Third, even for those workers who are earning less than equally trained full-time colleagues, we have few good measures of the value of the non-wage advantages they may be receiving from their jobs which may partially compensate them for their lower hourly wages or fringes. Given the commitment many part-time workers have to non-market activities such as family and school, and given that many part-timers are in households with full-time earners, part-time work -- even at lower wages -- may represent an optimal choice.

Fourth, appropriate wage payments require not only an understanding of the skills of the worker, but also the demands of the job. As long as employers primarily use part-timers in narrowly defined jobs that require little training and have few promotion opportunities, the productivity of part-time workers may well remain below that of full-time workers. In this case, the policy concern is not with the wages of the available jobs, but with the set of jobs which are offered to potential part-time workers.

For these reasons, observed differences in compensation between part-time and full-time workers may or may not signal real policy concerns. However, there are policy issues which are strongly correlated with certain aspects of the part-time/full-time compensation differential but which focus more clearly on well-defined problems.

a. Encouraging Employers to Explore a Broader Set of Part-Time Options

The heterogeneity of the part-time labor force implies that current part-time work options are surely very appropriate for some group of part-time workers. A teenager seeking to earn extra income may find a part-time job at a local fast-food chain completely acceptable. However, certain groups of part-time workers are more limited by low-wage, non-career-oriented part-time jobs.

Women's education levels and labor market experience have increased steadily during this century. Increasingly, women have labor market talents that firms want, and many women have strong work commitments. Yet, at the same time, many married women face times when their commitments to family and children make full-time employment difficult. Employers will face a growing challenge to provide job options for these women during years when they seek to be committed and loyal, but part-time, workers. This may require reconceptualizing the organizational structure and task assignments within jobs, to allow for easier coordination between workers on different hours schedules. It may lead to a variety of alternative job arrangements such as job sharing and flexible schedules for full-time workers as well.

Some initial steps in this direction have been taken. The Federal Employees Part-time Career Employment Act of 1978 lays out guidelines for part-time compensation and encourages Federal employers to offer part-time jobs to interested workers (Ronen, 1984). A number of states have similar legislation (Olmsted, 1983). Further work in this area should involve education of employers regarding more flexible hour arrangements, and research into the ways in which current employers are successfully dealing with the coordination and use of permanent part-time employees.

b. Encouraging Part-time Employers to Design Flexible Fringe Benefit Plans

One of the biggest stumbling blocks to providing career-oriented part-time jobs is the demand that such jobs include fringe benefits, which many firms fear will create unacceptably large fixed costs for part-time workers. However, from the worker's perspective, the lack of fringe benefits in part-time jobs may cause serious hardship, and clearly decreases the compensation associated with such jobs.

However, there are ways to make fringe benefits available to part-time workers without raising their cost relative to full-time workers. Some fringes can easily be pro-rated to the hours of the part-time worker. But other fringes may be more "lumpy" and not easily divisible. One option is to provide "cafeteria" benefit plans, in which workers can choose the mix of fringe benefits they want to receive, with the total value pro-rated to their work hours (Chollett, 1984).

The changes in tax provisions governing pensions have increased the popularity of defined-contribution plans relative to defined-benefit plans. The former are easier to pro-rate, as they base pension payments on the amount paid into the fund, while the later establishes a guaranteed future pension payment, and then adjusts payments accordingly.

With regard to health insurance, often a very difficult fringe benefit to pro-rate, firms may experiment with higher co-payments for part-time workers. In addition, the concern about lack of health insurance coverage for many households is prompting increasing government interest in incentive schemes (tax incentives are suggested most frequently) that encourage employers to provide health coverage for more employees. The 1986 Tax Reform Act included a clause (to be implemented in 1989) requiring employers to be non-discriminatory in health benefits for all employees who work more than 17.5 hours/week. However, the exact way in which this clause will be interpreted is still extremely unclear (Conway, 1988; BNA, 1988).

In addition, there is a clear role for public education of firms regarding potential fringe benefit arrangements for part-time workers, as well as further research on the effectiveness of various fringe/wage compensation packages.

c. Assisting Involuntary Part-time Workers

The one group of part-time workers who appear to face the greatest problems are involuntary part-timers. The growing share of involuntary part-time work in the labor force over the past two decades makes this a very current concern. The relatively large number of involuntary part-time workers is particularly surprising in the late 1980s, a period of sustained growth and falling unemployment.

The many similarities between involuntary part-time workers and the unemployed implies that the solutions for unemployment are also the solutions for involuntary part-time employment. Strong macro-economic growth that results in rising labor demand is clearly the best way to shrink the size of the involuntary part-time work force.

However, given the regular occurrence of economic cycles, involuntary part-time employment is unlikely to disappear in the near future. One concern is that Unemployment Insurance (UI), which is available to partially replace wages of those who are completely unemployed, is not available to replace the wage losses of involuntary part-timers who have been put on shortened hours. In some circumstances, being placed on shortened hours involuntarily may leave a worker in a worse situation than he or she would face if completely unemployed and eligible for UI.[10] One possibility is a revision of the Unemployment Insurance system that allows it to partially replace the earnings of those constrained to low levels of employment due to slack labor market demand.

In fact, a few states do have some provision for this in their UI system (Zalusky, 1984).

VI. CONCLUSIONS AND RESEARCH SUGGESTIONS

The most important conclusion in this paper is that part-time work is a significant aspect of the U.S. labor market, and has been increasing in importance over the past decades. Part-time work is used by a very diverse range of workers, particularly teens, older workers, and women with children. As a result, thinking about the part-time labor market as a single group of workers is probably not useful; different part-time workers may have very different concerns and needs.

The evidence we have available indicates that most employers think of part-time workers in a single context: as non-promotable workers who solve particular scheduling and peak-demand problems within the firm. However, there is increasing evidence of a growing awareness that there may be other types of part-time workers and other types of part-time jobs. Part-time workers in professional and managerial occupations appear to be at least as well-paid as their full-time fellow workers. The growing number of skilled women who seek part-time work on a temporary basis during their child-rearing years may lead to a growing number of "professional part-time" jobs, and some reconceptualization of part-time work and part-time workers.

Ongoing growth is forecast in the service, retail, and financial industries, all areas with a lot of part-time slots. This will surely continue to open up part-time jobs to workers interested in taking them. Most of these jobs will be of the more traditional lower-skill, non-career-path type, although for many workers this may be an appropriate choice. The steady increase expected in the percent of women with young children entering the labor market will also continue to provide an ongoing stream of part-time workers, many of them potentially interested in more challenging jobs than part-time work has typically provided. While teenagers are currently a shrinking percentage of the labor force, the coming decade will see the maturing of the "baby boom children's children", increasing the number of teenagers. The current macroeconomic conditions, with steady growth and a low unemployment rate, suggest that involuntary part-time employment will continue to fall over the next few years. However, any future economic slowdown may turn this around quickly.

Some of the policy implications of these trends were discussed above. However, to understand the part-time labor market, and to make intelligent public policy choices, there are several areas about which we currently know too little. Useful future research and data projects might include the following:

1. The lack of fringe benefits in part-time jobs is an ongoing point of concern among part-time workers -- both voluntary and involuntary alike. For some households it clearly causes severe problems. Yet we know very little about the relationship between part-time jobs and fringe benefit programs. A significant number of part-time jobs are covered by a wide range of fringes, while other part-time jobs have almost no fringes. One useful research project is an employer survey which inquires into fringe benefit policies among employers with part-time employees, both identifying which employers offer fringes to part-time workers, why they

offer them, and the type of fringe benefits programs they operate. A second possibility is to actually generate pilot studies of potential schemes designed to encourage pro-rated fringe benefit coverage among employers of part-time workers, such as "cafeteria plans", or health plans with pro-rated cost sharing.

2. We have tended to treat all part-time workers who say they were only looking for part-time work as identical, without inquiring into their reasons for seeking part-time work. This leaves a great deal of uncertainty about the nature of labor market constraints and household constraints faced by those who choose part-time work. It would be an extremely useful project to fund research (perhaps a supplement to the CPS) that inquires more closely into the child care, transportation, health, and work options of those who are classified as voluntary part-time workers. This will provide information on the extent to which the part-time employment of these workers is a sign of a positive labor market choice, or a second-best alternative chosen because of other serious household constraints. Understanding the nature of the constraints on voluntary part-time workers will also help in the planning of government programs designed to address labor market problems, such as child care assistance.

3. There is a need to better understand the impact of part-time work on the household well-being of households which contain part-time workers. There is no serious cohesive piece of research that studies the correlation between part-time work and household financial responsibilities, or the causality between part-time work and household

poverty, government transfer usage, or other measures of household economic security and well-being.

4. We need to better understand the labor market implications resulting from the demands of women who are predominantly full-time and long-term workers for part-time jobs at certain points in their life. First, we need to understand how women workers manage this transition. What part-time jobs do they find? Do they change jobs or make arrangements with current employers? What is the career cost of taking some time as a part-time worker? How does their part-time work affect the structure of household work? How do these workers re-enter full-time work? Second, we need to understand the effect of these labor market choices on employers. How many employers retain former full-time employees as current part-time employees? Under what circumstances do they make these arrangements? What are the effects on the operation, organization, and productivity of the workplace? The phenomenon of women who marry, raise children, and also pursue life-long labor market involvements is an increasingly important one in our society, and one that is only poorly understood. Similar questions can also be asked regarding elderly workers who may seek to move from full-time into part-time work rather than retiring completely.

FIGURE 1
PART-TIME WORK AMONG WOMEN
1968-1987

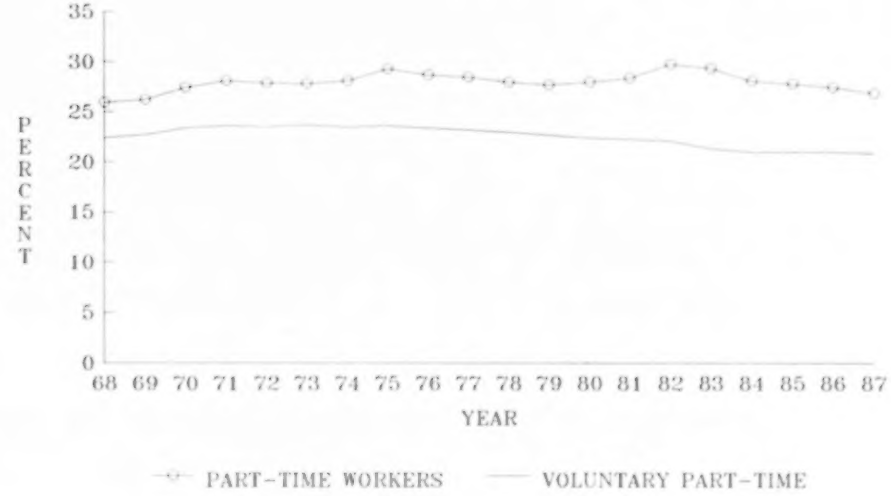
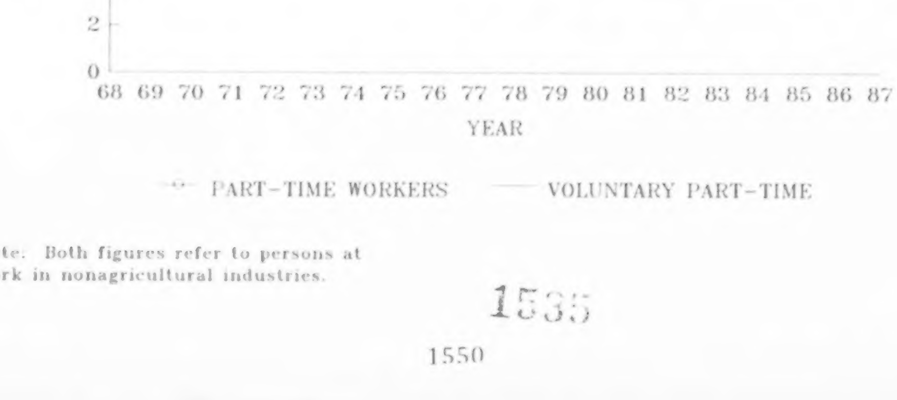


FIGURE 2
PART-TIME WORK AMONG MEN
1968-1987



Note: Both figures refer to persons at
work in nonagricultural industries.

NOTES

1. 1955 numbers from Deutermann and Brown (1978), Table 1. 1987 numbers from U.S. Department of Labor (1988a), Table B-19. The 1955 numbers include all workers age 14 and up; the 1987 numbers include workers age 16 and up. For comparability with 1987, those usually on full-time schedules temporarily working part-time for noneconomic reasons are not counted as part-time in 1955.

2. There is also a category for individuals who typically work full-time, but are working part-time for non-economic reasons (sickness, vacation, holiday, etc.) In most calculations, these individuals are counted as full-time workers.

3. In contrast to the U.S., Canada in 1976 redefined part-time work as less than 30 hours per week. A number of European countries also use lower definitions (Hedges and Gallogly, 1977).

4. Data in Figures 1 and 2 from U.S. Department of Labor (1988a), Table B-19.

5. In comparison to European economies, the U.S. has generated far fewer part-time jobs in recent decades. Between 1973 and 1981 half of all new jobs in Europe were part-time, while in the U.S. the number was one-fifth (Plewes, 1984). Cross-country comparisons of part-time work are often difficult because of widely varying definitions.

6. The standard statistical technique is to estimate a probit equation on part-time versus full-time work among workers and use these results to calculate the so-called Heckman selectivity term which is included as a variable in separate part-time and full-time wage regressions.

7. The Long and Jones (1981) study is an exception.

8. In a similar manner to wages, Blank finds that involuntary part-timers receive fewer fringes than other part-timers.

9. Provision of some fringe benefits is regulated by law. For instance, if a firm offers a pension plan, ERISA requires that all workers who are employed for more than 1000 hours over the year must be included in it.

10. Even voluntary part-time employees may be losers with regard to Unemployment Insurance, since many states set minimum earnings requirements. Unemployed workers with prior annual earnings below this level are ineligible for UI. Of course, part-time workers--voluntary or involuntary--who have not held a previous full-time job, would be unable to benefit from any expansion of UI coverage. The percent of involuntary part-timers who are on shortened hours and would benefit from a revision of UI laws is typically higher in recessionary times. In boom times, a higher fraction of involuntary part-timers are new labor market entrants who have not yet found full-time work.

REFERENCES

Applebaum, Eileen. "Restructuring Work: Temporary, Part-time and At-Home Employment." In Heide I. Hartmann, Robert E. Kraut, and Louise A. Tilly (eds.), Computer Chips and Paper Clips: Technology and Women's Employment, Volume 2. Washington, D.C.: National Academy Press, 1986.

Barnett, Nancy. "Part-time: Workers' Mandate?" In Part-time Employment in America. First National Conference on Part-time Employment, 1983, National Association of Part-time Professionals, April 1984.

Bednarzik, Robert W. "Involuntary Part-time Work: A Cyclical Analysis." Monthly Labor Review 98 (September 1975): 12-18.

Bednarzik, Robert W. "Short Workweeks During Economic Downturns." Monthly Labor Review 106 (June 1983): 3-11.

Blank, Rebecca M. "Are Part-time Jobs Bad Jobs?" Brookings Institution Discussion Paper, prepared for the Brookings Institution conference Future Job Prospects, February 1989a.

Blank, Rebecca M. "The Role of Part-time Work in Women's Labor Market Choices Over Time." American Economic Review 79 (May 1989b): Forthcoming.

Blank, Rebecca M. "Simultaneously Modelling the Supply of Weeks and Hours of Work Among Female Household Heads." Journal of Labor Economics 6 (April 1988): 177-204.

Bureau of National Affairs. "Special PPF Report: Part-time and Other Alternative Staffing Practices." Bulletin to Management 39 (June 23, 1988).

Chollett, Deborah. "Setting Up Employee Benefit Packages: Issues and Trends." In Part-time Employment in America. First National Conference on Part-time Employment, 1983, National Association of Part-time Professionals, April 1984.

Conway, Elizabeth. "Working Along the Edge." Business and Health 6 (October 1988): 12-15.

Corcoran, Mary, Greg J. Duncan, and Michael Ponza. "A Longitudinal Analysis of White Women's Wages." Journal of Human Resources 18 (Fall 1983): 497-519.

Daski, Robert S. "Area Wage Survey Test Focuses on Part-timers." Monthly Labor Review 97 (April 1974): 60-62.

Deutermann, William V., Jr., and Scott Campbell Brown. "Voluntary Part-time Workers: A Growing Part of the Labor Force." Monthly Labor Review 101 (June 1978): 3-10.

Ehrenberg, Ronald G, Pamela Rosenberg, and Jeanne Li. "Part-Time Employment in the United States." In Robert A. Hart (ed.), Employment, Unemployment, and Labor Utilization. London: George Allen and Unwin, 1988.

Fitzroy, Felix R. and Robert A. Hart. "Part-time and Full-time Employment: The Demand for Workers and Hours." Unpublished paper, University of Sterling, May 1986.

Gordon, Anne R. "The Full-time/Part-time Wage Differential and the Choice to Work Part-time for Young Married Women." Unpublished paper, University of Wisconsin, February 1987.

Hedges, Janice N. and Stephen J. Gallogly. "Full and Part-time: A Review of Definitions." Monthly Labor Review 100 (March 1977): 21-28.

Holden, Karen C. and W. Lee Hansen. "Occupational Segregation among Part-timers and Full-timers." In Claire Brown and Joseph A. Peckman (eds.), Gender in the Workplace. Washington D.C.: The Brookings Institute, 1987.

Holland, Susan S. "Trends in Full- and Part-time Employment." Employment and Earnings 12 (June 1966): 6-22.

Ichniowski, Bernard E. and Anne E. Preston. "New Trends in Part-time Employment." Industrial Relations Research Association, 38th Annual Proceedings, December 28-30, 1985, (1986): 60-71.

Jones, Ethel B. and James E. Long. "Part-week Work and Human Capital Investment by Married Women." Journal of Human Resources 14 (Fall 1979): 563-578.

Kahne, Hilde. Reconceiving Part-time Work. Totawa, NJ: Rowman and Allenheld, 1985.

Levitan, Sar A. and Elizabeth A. Conway. "Part-timers: Living on Half Rations." Challenge 31 (May-June 1988): 9-16.

Leon, Carol and Robert W. Bednarzik. "A Profile of Women on Part-time Schedules." Monthly Labor Review 101 (October 1978): 3-12.

Long, James E. and Ethel B. Jones. "Married Women in Part-time Employment." Industrial and Labor Relations Review 34 (April 1981): 413-425.

Long, James E. and Ethel B. Jones. "Part-week Work by Married Women." Southern Economic Journal 46 (January 1980): 716-725.

Main, Brian G. "Hourly Earnings of Female Part-time Versus Full-time Employees." Unpublished paper, University of St. Andrews, August 1987.

Mellor, Earl F. "Shift Work and Flexitime: How Prevalent Are They?" Monthly Labor Review 109 (November 1986): 14-21.

Mellor, Earl F. "Workers at the Minimum Wage or Less: Who They Are and the Jobs They Hold." Monthly Labor Review 110 (July 1987): 34-38.

Mellor, Earl F. and William Parks II. "A Year's Work: Labor Force Activity From a Different Perspective." Monthly Labor Review 111 (September 1988): 13-18.

Mintz, Judith. "Part-time Work: The Effect of Fragmentation on Employees." Report to the Manpower Administration, U.S. Department of Labor, October 1978.

Moen, Phillis. "Continuities and Discontinuities in Women's Labor Force Activity." In Glen H. Elder, Jr. (ed.), Life Course Dynamics: Trajectories and Transitions, 1968-1980. Ithaca, NY: Cornell University Press, 1985.

Montgomery, Mark. "Hours of Part-time and Full-time Workers at the Same Firm." Industrial Relations 27 (Fall 1988a): 394-406.

Montgomery, Mark. "On the Determinants of Employer Demand for Part-time Workers." Review of Economics and Statistics 70 (February 1988b): 112-117.

Morgenstern, Richard D. and Hamovitch, William. "Labor Supply of Married Women in Part-time and Full-time Occupations." Industrial and Labor Relations Review 30 (October 1976): 59-67.

Nakamura, Alice and Masao Nakamura. "Part-time and Full-time Work Behavior of Married Women." Canadian Journal of Economics 16 (May 1983): 229-257.

Nardone, Thomas J. "Part-time Workers: Who Are They?" Monthly Labor Review 109 (February 1986): 13-19.

Nine to Five. Working at the Margins: Part-time and Temporary Workers in the United States. National Association of Working Women, September 1986.

Nollen, Stanley D., Brenda B. Eddy, and Virginia H. Martin. Permanent Part-time Employment. New York: Praeger, 1978.

Oi, Walter. "Labor as a Quasi-Fixed Factor." Journal of Political Economy 70 (December 1962): 538-555).

Olmsted, Barney. "Changing Times: The Use of Reduced Work Time Options in the United States." International Labour Review 122 (July-August 1983): 479-492.

Owen, John. "Why Part-time Workers Tend to be in Low-Wage Jobs." Monthly Labor Review 101 (June 1978): 11-14.

Owen, John. Working Hours. Lexington, MA: D.C. Heath, 1979.

Plewes, Thomas "Profile of the Part-time Worker" In Part-time Employment in America. First National Conference on Part-time Employment, 1983, Association of Part-time Professionals, April 1984.

Presser, Harriet B. and Wendy Baldwin. "Child Care As a Constraint on Employment." American Journal of Sociology 85 (March 1980): 1202-1213.

Ronen, Simcha. Alternative Work Schedules. Homewood, IL: Dow Jones-Irwin, 1984.

Shank, Susan E. "Preferred Hours of Work and Corresponding Earnings." Monthly Labor Review 109 (November 1986): 40-44.

Simpson, Wayne. "Analysis of Part-time Pay in Canada." Canadian Journal of Economics 19 (November 1986): 798-807.

Smith, Shirley J. "The Growing Diversity of Work Schedules." Monthly Labor Review 109 (November 1986): 7-13.

Stein, Robert L. and Jane L. Meredith. "Growth and Characteristics of the Part-time Work Force." Monthly Labor Review 83 (November 1960): 1166-1175.

Sundt, Leslie A. "The Effect of Work Interruption on Subsequent Earnings." Unpublished paper, University of Arizona, April 1987.

Sundt, Leslie A. " 'Involuntary' Employment and Labor Market Constraints upon Women." Unpublished paper, University of Arizona, October 1988.

Terry, Sylvia L. "Involuntary Part-time Work: New Information from the CPS." Monthly Labor Review 104 (February 1981): 70-74.

Tilly, Chris. "Highs and Lows of Part-time Employment." Unpublished paper, University of Lowell, November 1988.

United States Department of Labor, Bureau of Labor Statistics. Labor Force Statistics Derived from the Current Population Survey, 1948-1987. Washington, D.C.: Government Printing Office, August 1988a.

United States Department of Labor, Women's Bureau. Flexible Workstyles: A Look at Contingent Labor. Washington D.C.: Government Printing Office, 1988b

Woodbury, Stephen A. "Substitution Between Wage and Nonwage Benefits." American Economic Review 73 (March 1983): 166-182.

Zalusky, John, "Part-time Work: Workers' Mandate?" In Part-time Employment in America. First National Conference on Part-Time Employment, 1983, National Association of Part-time Professionals, April 1984.

29b. TEMPORARY WORK

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29. TEMPORARY WORK

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The term temporary work refers to a class of employment relationships in which employer and employee share an ex-ante understanding that the job is of limited duration. The precise form that the temporary employment takes includes on-call arrangements between particular employers and employees, limited duration direct hires, and the utilization of the temporary help services industry. In addition, various forms of contract arrangements may also be considered temporary in nature. Firms sometimes contract for specific jobs to be transferred from their premises to a job shop (another employer), thus decreasing the size of their requisite permanent staff. Sometimes, as in food service and cleaning, the jobs remain on the premises but the employees are transferred to another employer's payroll and supervision. In employee leasing, leasing firms contract to provide a specified number and type of worker to the client employer for a specified time period, handling all hiring, firing, payroll, and personnel issues for the client. Some contractors are self-employed individuals, such as professional consultants or building trades craftworkers, offering their services for the duration of a specific job. Government sources of data on temporary employment are limited to the temporary help services industry and include Current Employment Statistics, the Current Population Survey, and County Business Patterns. Estimates of other forms of temporary work are obtained from private survey data. (See the Appendix for a brief description of these data sources.)

Increased attention to the phenomenon of temporary work is warranted in light of current debates over the need for flexibility in the labor market. Corporate restructuring is occurring at all levels in response to increased competition, both domestically as a result of deregulation, and internationally. It is important to evaluate the relative costs and benefits of flexibility to the worker and the firm and to investigate whether current or potential abuses warrant policy intervention.

Following a description of the trends in temporary work, this paper considers the costs and benefits associated with the increased flexibility and outlines policy interventions that should be considered. Areas where data are inadequate are also identified, and in an Appendix, recommendations are offered to remedy the gaps.

THE SIZE, GROWTH, AND DISTRIBUTION OF TEMPORARY EMPLOYMENT

The Temporary Help Services Industry

Due to its standard four-digit industry classification (SIC7362), the temporary help services (THS) industry is the category of temporary work about which we know the most. The industry, a subcategory of business services, is comprised of firms which provide businesses with workers for temporary assignments. The workers are on the payroll of the THS firm. According to the industry trade association, the relationship between the THS firm and the worker is that of employer-employee, while that between the THS firm and its customer (the client firm) is one of supplier-purchaser.

The temporary help services industry, measured by both revenue and employment, has been growing at a rate surpassing that of employment as a whole and of service employment taken by itself. This growth is occurring in the context of economic uncertainty and continued growth of female labor supply. Industry observers cite uncertainty on the part of employers in the wake of the disruptions of the early 1980s making them less willing and less able to make longer term hiring commitments (Carey and Hazelbaker, 1986; Abraham, 1988). Temporary employment often provides a needed flexibility. On the supply side, the industry is often thought to draw women who desire flexibility in scheduling due to the competing demands of wage work and family-work (Howe, 1986). The industry trade association emphasizes variety, choice and control in its attempt to attract workers to the temporary help services industry (Sacco, no date).

The employment of the THS industry constitutes less than one percent of the total labor force. Employment estimates in 1985 range from 455,000 (Current Population Survey) to 708,000 (Current Employment Statistics) to 939,000 (National Association of Temporary Services or NATS). By 1988, according to Current Employment Statistics (CES), there were approximately one million workers in the temporary help services industry. All these estimates are static; that is, they measure the number of workers at a given point in time. NATS estimates that over the course of the year 6 million workers were employed by the industry.[1]

Despite its small absolute size, industry growth rates suggest that temporary work is an important phenomenon. Between 1978 and 1985 average annual employment in the THS industry grew 104 percent, from 340,000 in 1978 to 695,000 in 1985--three times that of service employment and eight times that of all employment (Carey and Hazelbaker, 1986). Between 1982 and 1984 it was one of the fastest growing of all industries (at the four digit level). While it accounted for less than 1 percent of all jobs in the economy, the THS industry accounted for 3 percent of all job growth between 1982 and 1985.

As Figure 1, which presents CES data, shows, employment has generally grown steadily, with growth taking off in the early 1980s. Between 1978 and 1988 employment in the THS industry more than tripled, from 333,000 to 1,015,800, while total employment grew by 23 percent, from 86.7 million to 106.3 million.

Perhaps a better measure of the intensity of demand for THS employees is provided by data on the dollar value of payrolls. In the THS industry, the quantity of employment increases if, instead of one worker being dispatched to four different job sites in a one month period, four distinct workers are assigned to those same customers the following month. Employment data would register growth while the demand for temporary workers actually remained constant. Measured in 1982 dollars, payroll grew at a rate of 754 percent in the 1970s and 236 percent in the 1980s. This compares with 456 percent and 164 percent for the same time periods for all service occupations, indicating that using this more accurate measure also shows above average growth for the THS industry (calculated by Lapidus, 1989, from County Business Patterns, various years).

Bureau of Labor Statistics projections estimate continued growth averaging 5.0 percent a year between 1984 and 1999, faster than the 4.2 percent growth rate projected for business services and much faster than the 1.3 percent growth projected for the economy as a whole (Carey and Hazelbaker, 1986). The Bureau of National Affairs (1988) reports periodically on the hiring expectations of some 223 surveyed organizations over a two year time horizon. Most organizations surveyed (two-thirds) expect no change in their use of agency-provided temporaries; 11 percent anticipate increased use and 22 percent expect decreased use.

Other Forms of Temporary Help

Data reported by 9to5, National Association of Working Women, suggest that the magnitude of direct-hire temporary work is as large or larger than the number hired via the temporary help industry. For example, Cigna Insurance of Philadelphia hires 60 percent of its temporary work force directly, Control Data Corporation runs its own temporary services agency, and Travelers Company plans to fill 70 percent of its temporary help needs directly with in-house retirees (9to5, National Association of Working Women, 1986). Contract labor, in which a firm subcontracts a portion of its workload to another firm, may also be considered a form of temporary work. It is difficult to measure; the category may include many 'self-employed' consultants. If actual employment in all types of temporary work is three times greater than THS employment alone, approximately three million workers might be categorized as temporary workers. By way of comparison, general medical and surgical hospitals, another industry at the four-digit level (SIC8062) also employs 3 million workers annually. The telephone communications industry (SIC4881) employed 905,000 workers in 1987 and motor vehicles and equipment employed 865,000.

While little is known definitively about the growth of these other types of temporary work, the Bureau of National Affairs periodic survey of employers' hiring expectations provides some data. With respect to direct-hire temporaries, about 70 percent of those employers surveyed expect to employ about the same number over a two-year period, while 16 percent project more use and 10 percent predict decreased use of direct-hire temporaries. Over 80 percent of the firms who use contractors expect no change, while the remainder are split equally between those who anticipate greater use and those who anticipate less. Clearly with such limited data, it is impossible to know whether temporary work as a whole is growing more or less rapidly than THS.

Distribution by Region, Firm Size, City Size, and Industry

The data above are national averages. However, the use of forms of temporary workers varies considerably by region and by size of SMSA. Ninety percent of all employers in SMSA's with a population of more than one million use temporaries, as compared with 47 percent of employers in rural areas (Bureau of National Affairs, 1986). In an analysis of the 40 largest SMSA's, Mayall and Nelson (1982) found that THS employment grew even faster than in the U.S. as a whole. They also found high growth to be concentrated in the new cities of the so-called sun belt. THS usage, as measured by THS employment as a percent of total private wage and salary employment, was highest in San Jose, Houston, Anaheim, Milwaukee, Miami, Tampa, New York and Los Angeles (Mayall and Nelson, 1982). All but Milwaukee and New York are, if not sun belt states, at least Southern and Western; all are also large--not small--cities.

In its 1986 survey, the Bureau of National Affairs (BNA) surveyed 442 personnel executives and found that 77 percent used THS firms, 64 percent limited duration direct-hires, 63 percent leasing or contracting out, and 36 percent maintained their own pool of on-call workers (Bureau of National Affairs, 1986). Variations across industries and by size of firm were reported, with limited duration direct-hires used by more non-manufacturing firms than manufacturing firms and on-call pools used by more health care firms than other types of firms. Larger facilities were more likely to use THS firms (84 percent of firms with more than 1000 employees, compared with 64 percent of those with fewer than 100). In a Dun and Bradstreet (1987) survey, 53.6 percent of firms with between 500 and 999 workers planned to use temporary clerical help in 1987, compared with 39.6 percent in 1986.

The American Management Society Contract Labor Survey of 1988 found that, of the 289 companies reporting their usage of THS workers, 36 percent said they use such help every week and an additional 12 percent every week on average. A higher proportion of companies in the utilities/transportation/communication industries (relative to other industries) reported using THS workers. More firms and organizations (about 50 percent) in banking/finance and in the education/government/nonprofit sector reported increasing their THS usage during 1987; this compares to a 40 percent increase in other industrial sectors (Long, 1988).

Federal and local governments are increasing their reliance on temporary help. In January of 1985, federal civil service regulations issued by the federal Office of Personnel Management were relaxed to permit federal agencies to employ direct-hire temporary workers for up to four years. By the end of January 1986, 300,000 workers in the executive branch were listed as temporary workers, more than 10 percent of all executive branch workers. In 1979 the California state legislature passed enabling legislation that permitted counties to use THS services (Mayall and Nelson, 1982). By 1986, the Service Employees International Union represented 5000 temporary workers employed by the County of Los Angeles (9to5, 1986).

Occupational Distribution of THS Employment

Four general occupational categories of THS employment can be identified: clerical, industrial, medical, and technical and professional. According to data from the Current Population Survey, 45 percent of THS workers are employed in clerical occupations, 20 percent in manufacturing and 15 percent in technical and professional specialties. Clerical help has been the mainstay of the THS industry since its inception. In a 1974 survey, Gannon reported the following estimates: 65-70 percent in the clerical sector, 25-30 percent in the industrial sector, and 2-5 percent in technical and professional placements. In a 1985 mail survey of 1,200 firms in six industries, Mangum et al. (1985) report 62 percent of the respondents utilizing a THS service do so for clerical workers, 43 percent reported using production workers, 46 percent professional workers, and 41 percent reported using service workers. The National Association of Temporary Services reports that employment by segment in 1985 was as follows: clerical 60 percent, industrial 9 percent, medical 11.5 percent, and technical and professional 19.5 percent. Revenue per segment based on billings was 49 percent clerical, 7.4 percent industrial, 8.8 percent medical, and 34.8 percent technical and professional.

Gannon (1984) reports that the medical temporary help area is the fastest growing. This could be due to a number of factors, including the shortage of registered nurses, pressures for cost containment in health care due to the implementation of diagnostic related group insurance reimbursement, and the growth of the for profit sector in health care. This represents a change. In a report based on research undertaken in 1981, Kehrer and Szapiro (1983) found temporary nursing services to be a relatively minor factor in the supply of registered nurse services. They found no evidence to suggest that its importance would increase in the near future.

The growth in the professional sector is thought by Audrey Freedman of the Conference Board to be the result of corporate restructuring. The displaced workers of the early 1980s include managers and salaried employees who were affected by divestitures, buy-outs, spin-offs, and mergers (Freedman, 1986). Whether these are the same workers who are the employees of the new legal, accounting, and management temporary firms is unclear from the available data. However, the impact of growing reliance on professional temporaries may be problematic in the long run. U.S. management practices are already under fire for the relatively short time horizons used in corporate decision making. Short term management and professional staffing problems are likely to exacerbate the problem.

Differences in occupational distribution by sex are instructive. Female temporary workers tend to be concentrated in relatively skilled occupations and have higher levels of education than do their counterparts in the nontemporary labor force. In contrast, male THS workers have lower levels of education than do men in the non-temporary labor force (Lapidus, 1988). Table 1 reports the occupational distribution of THS employees and compares it with the distribution of the permanent workforce. Administrative support occupations, a category that at the two-digit level includes clerical work, is the single largest occupational category. Sixty-two percent of all female temporary employees are in that category, as compared with thirty percent of the female labor force as a whole. Reasons for this disproportion, which is statistically significant, are discussed below.

THE DEMAND FOR TEMPORARY EMPLOYEES

Towards a Permanent Temporary Workforce?

"Post recession economics have taught us that, in order to maximize efficiency, the cost of permanent personnel no longer can be viewed as a fixed expenditure. Instead, managers now recognize that it is wiser to maintain a lean permanent staff and build temporary help use into their budgets" (Raymond Marcy, senior vice president at ADIA Personnel Services, quoted in Modern Office Technology, May 1988). Abraham (1988) finds that the use of flexible staffing arrangements constitutes an important component of many U.S. employers' short term adjustment strategies. While the THS industry has long been utilized for seasonal fluctuations and to cover vacations and illness leaves taken by permanent staff, personnel managers are now reporting building their use into staffing plans ex ante.

The cyclical performance of the THS industry has changed. Smith (1971) and Abraham (1988) note that the industry seems to lead the business cycle. That is, at a cyclical trough increases in demand may be either short term blips or represent a cyclical upturn. "Temporary workers, then, are hired to do the work which permanent workers would be hired to do if the customers knew of shifts in their demand schedules." Cyclical performance in the 1980s, however, differs from that of the 1970s. During the recessions of the 1970s employment in the industry declined by 18 percent (1971) and 26 percent (1975). In 1980, despite the greater severity of the recession, employment in the THS industry declined by only 5 percent (Lapidus, 1989). At both business cycle troughs and peaks, then, THS industry employment shows secular growth--at each trough or peak employment is larger than at the previous trough or peak--and, as Figure 2 illustrates, the rate of change is moderating, at least in the trough. Temporary work, since 1978, appears to be a less cyclical phenomenon than previously.

Since temporary work is continuing to grow at rates greater than that of economic expansion, and since it is experiencing secular as well as cyclical growth, and appears even to be reducing its rate of change over the cycle, it is important to consider whether temporary work is displacing what would otherwise be permanent jobs. Labor unions are concerned that permanent jobs are being lost to a variety of temporary arrangements, resulting in declines in union power and membership (Nelson-Horchler, 1987). According to Richard Leonard of the Oil, Chemical, and Atomic Workers Union (OCAW), in the petroleum refining and chemical processing industries the use of contract labor has expanded beyond emergencies and plant turnarounds to " . . . the wholesale replacement of their regular permanent workforces with labor supplied by outside agencies" (Leonard, 1988). Contract language that has traditionally protected union workers from replacement by temporary laborers has been the source of numerous strikes called by the OCAW. Some observers expect the use of contract labor to increase in the white collar field as well, including among non-unionized professionals. Walter W. Macauley, president of Adia Personnel Services, predicts that temporary hiring of professionals--some for relatively long-term assignments of six-months to two years--will grow. Richard A. Jacobs, senior vice president at A.T. Kearney Inc., based on a survey of 375 large U.S. companies, estimates that on average these firms are expanding temporary help, including contract labor, at about 17 percent per year, and are reducing regular employment in all occupational areas by about 1.5 percent per year (Macauley and Jacobs in Nelson-Horchler, 1987).

Ring and Core Staffing Strategies

Trends in the THS industry are consistent with a more general movement away from long term employment relationships. This in turn parallels other forms of corporate restructuring. Business Week (1986) depicts the firm of the future as a "hollow corporation," a coordinating rather than a producing entity. The firm as network contracts for more and more services, reversing an older pattern of reliance on vertical integration. This new pattern is said to maximize firms' flexibility and responsiveness to changing market conditions. The business press is replete with talk of downsizing and spinoffs: employee leasing, contracting out and temporary help are elements of this overall corporate strategy. Relying on external (to the firm) markets for labor rather than on what have come to be called internal labor markets represents a departure from post-war corporate staffing patterns.

The THS industry may be facilitating the further development of a two-tiered labor market. Some labor economists have long posited the existence of a dual or segmented labor market in which the economy is depicted as composed of a core and a periphery. Labor relations in the core sector--capital intensive industries with high wages, oligopolistic market structures, high levels of unionization, and higher than average profit rates--have tended to be based on long-term attachments between workers and firms. The development of internal labor markets offering the possibility of career ladders, on-the-job training, formalized grievance procedures and some measure of job security, were both enabled by and in turn encouraged such long-term attachments (Doeringer and Piore, 1971). These conditions never extended to the entire labor force, however. The industries in the core are surrounded by a periphery characterized by competition, low barriers to entry, and lower than average rates of profit. Labor in the periphery constitutes a secondary labor market in which workers experience high degrees of turnover and few if any opportunities for advancement.

The potential implications of the segmented labor market model for understanding the trend toward temporary work become apparent when the size distribution of firms with the largest proportions using THS workers is recalled. Based on the survey data available, it is apparently within the core sector of the economy that reliance on temporary help is growing the most. The THS industry, while allowing firms to convert a greater portion of their labor costs from fixed to variable costs, also facilitates the development of more casual systems of labor relations in the sectors of the labor market that once provided the greatest degree of job security (Mangum et al., 1985).

In an article in Harvard Business Review, Bolt (1983) argues that from a management perspective the benefits of guaranteeing employment security outweigh the short term costs. He contends that layoffs are a short sighted response to an economic downturn: employees who feel secure in their jobs are more productive. "No amount of technological innovation, worker education and training, work force restructuring, or job redesign can realize its full productivity-improvement potential without the cooperation of trusting employees, men and women who know that change in the workplace does not threaten their livelihood." Yet further in the same article, in outlining the ingredients of a human resources strategy for job security, Bolt advocates using 'manpower buffers.' He cites Japanese success in relying on part-time workers, retirees, and subcontractors to keep the permanent work force at a stable level, and quotes an IBM executive who cites the buffer strategy as an important tool for ensuring full-time work to regular employees. Obviously, job security is not to be extended to the 'manpower' buffers, who are often women.

Mangum, Mayall and Nelson (1985) are among those who argue that the temporary help industry enables employers to offer various forms of employment guarantees to some workers at the expense of others. Core firms are under increasing competitive pressures from international competition and deregulation that are pushing them toward "reorganizing on a ring and core basis, holding to a minimum the number of workers who can expect to have a future with the company and for whom the company is willing to provide health and life insurance and retirement benefits" (Applebaum, 1986a). A full understanding of the development of a "ring and core" staffing strategy, and confirmation as to whether it is actually occurring, awaits the availability of more reliable data on staffing patterns by industry and firm, including the number of temporary workers and the type and lengths of their assignments.

The Quality of Jobs

Debate over the impact of the temporary help industry on the quality of jobs being created occurs within the context of disagreements among labor economists over the quality of jobs being produced by the "great American job machine" (Bluestone and Harrison, 1986). The new jobs, many argue, are low-skilled and low paid and do not provide the wages, benefits, and job security that workers need to support themselves and families. Kosters and Ross of the American Enterprise Institute argue that to the extent low earnings are more prevalent in the 1980s, they are the result of low working hours, not low wages. They assume that the vast majority of individuals who work less than full-time/full year do so voluntarily. Given these assumptions, they conclude these workers would be worse off if only full-time, full-year work were available (Kosters and Ross, 1987); the validity of this argument is further examined below. Evidence provided by Kosters and Ross also suggests that focusing on wage comparisons may miss an important cost saving aspect of temporary work because compensation for regular jobs includes substantially more fringe benefits.

While the pressure for cost reduction is a motive for increasing reliance on temporary help, technological change appears to be facilitating it. According to Harrison and Bluestone (1988) many of the skills needed in the burgeoning service economy are taught in school rather than on the job, enabling firms to rely less on the need to promote from within. In an earlier work, Bluestone, Hanna, Kuhn, and Moore (1981) argue that the technology of mass marketing (advertising) has enabled firms in the retail industry to replace skilled full-time sales people who built careers in retailing work with part-time, part year workers who are younger and develop no attachment to any employer. It should be noted that although technological factors contribute to the possibility of a contingent workforce response, they do not necessitate it. According to Applebaum (1986a), the impact of new microprocessor-based technologies depends critically on strategic decisions by firms with respect to how they implement them. They can be implemented so as to reduce or enhance the skills required of workers who use them (Hartmann, Kraut, and Tilly, 1986).

Uncertainty and Contingent Jobs

Political factors may also be enabling employers to restructure work in a manner that provides less job security. The system of labor relations that developed in the primary sector did so in part as a response to the demands of organized labor. The unionized sector of the labor force has shrunk dramatically in the 1980s. The unionization rate in 1960 was 31.4 percent; in 1970, 27.3 percent; in 1980, 23 percent;

and in 1986, 17.5 percent.[2] Rather than being in a position to bargain for job security, many unions in the 1980s have had to negotiate about concessions.

While increased economic uncertainty is often cited as a major reason for THS industry growth as firms are reluctant to make any commitments to workers (particularly in light of changes in the employment-at-will doctrine), the contention has not been tested. We do not know that economic uncertainty is increasing. It is possible that what we are witnessing is the redistribution of uncertainty from employers (who formerly carried their labor force through economic downturns) to workers. The long period without a recession, since 1982, and a tendency toward a reduced cyclical component of THS employment suggest that uncertainty may have been decreasing and THS may be becoming a more permanent part of the firm's labor force, especially for large firms. Uncertainty is a constant feature of a market economy; who is going to bear the cost of adjustment to change, however, is often a matter of political strength. As Berger and Piore (1980) state: "The distribution, or rather redistribution, of that uncertainty is the underlying issue in the labor market institutions which emerge in response to waves of worker unrest and which appear as the proximate cause of duality in the labor markets of advanced economies." Lower unionization rates imply that workers have less of a lever with which to shift the cost of uncertainty to management.

In our view, increasing reliance on an employment buffer and labelling it a policy of employment stability is a non-solution. As Gary Burtless, a senior fellow at the Brookings Institution, states: "To create greater security for the core, we are creating much less security for the periphery" (Uchitelle, 1988).

Long-Term Impacts of Temporary Work

Ironically, while the movement away from long term attachment between workers and firms is being undertaken in the name of competitiveness, it may in fact be having the opposite effect. Productivity may fall as workers are "less willing to go beyond their immediate tasks and concern themselves with a company's overall operation" (Uchitelle, 1988). Applebaum (1986b) also notes a tradeoff between building the skilled and responsible workforce needed to maximize the productivity increases from computer technology and minimizing short run costs. Reducing short term labor costs at the expense of investing in human capital may be costing the nation a great deal in terms of forgone GNP.

Applebaum further argues that this reorganization has particular implications for women workers. Internal job ladders have recently provided opportunities for advancement for clerical workers in some industries, as clerical workers gained skills and some were promoted to supervisory positions. The external market in clerical help provided by the THS industry potentially decreases opportunities on internal job ladders by increasing the supply of relatively skilled workers available from outside the firm. Firms rely on external sources such as community colleges and business schools to provide training, rather than providing training in-house to workers. Additionally, the entry level positions, often the most routine jobs in the firm, are themselves amenable to being filled by temporary help. Thus, a structured internal labor market in clerical jobs disappears and positions are filled by temporary workers. Applebaum's argument is supported at least in part by the greater and increased use of temporary workers by the largest firms.

There may also be unintended (and undesirable) equal employment opportunity effects of a core and periphery strategy, particularly when it is recognized that THS employment is more minority- and female-dominated than the labor force as a whole (see further discussion below). In a study undertaken for a National Planning Association research project on contingent workers, out of 50 case studies of American companies, only one corporation studied had "even bothered to look" at the equal employment opportunity implications of contingent worker strategies (Belous, 1988).

Three additional aspects of firm demand for temporary help require further investigation. First is the possibility that there are perverse incentives to use temporary help to lower unemployment insurance premium rates. Second is the possibility that firms are using temporary help to bypass legal rulings as the doctrine of employment-at-will is eroded by the courts. A new doctrine, while still legally evolving, would establish basic minimum job rights (if workers are in regular jobs) and would almost certainly not apply to temporary workers. Third, the use of temporary workers may both generate health and safety problems and allow firms to overstate their safety records. For example, the OCAW cites an advertisement placed by BASF chemicals in Geismar, Louisiana, claiming "4 million work hours at Geismar without an injury, serious enough, to require the loss of time from work." The union claims that the plant is run and, to a large extent, supervised by non-BASF temporary workers who are not counted in these statistics. The union also contends that in the chemical industry, inexperienced and untrained workers are processing large volumes of toxic substances at a danger to themselves and their communities. Further light could be shed on this issue if reporting on health and safety incidents involving temporary workers were required.

LABOR SUPPLY CONSIDERATIONS

Employment in the THS industry affords workers a unique degree of flexibility. While the choice is not without constraint, THS employees can elect to work particular days, hours, or times of the year. This degree of control over one's hours of work is often thought to appeal to women with family responsibilities, explaining why two thirds of the industry's employees are female. To the extent that the growth in temporary employment reflects changes in worker preferences, it may be improving the pareto efficiency of the labor market. Following a description of the demographic characteristics of THS employees and their statistical counterparts in the non-temporary work force, we evaluate the evidence on whether the growth of temporary help is a supply led phenomenon.

Demographic Characteristics of THS Workers

Table 2 presents data from the May 1985 Current Population Survey (CPS), in which respondents were asked whether their salary is paid by a temporary employment services firm. While the size of the sample is small, it represents the only national sample of THS employees. Nearly two-thirds (64 percent) of the THS industry's employees are women, as compared to 36 percent of the control group (representing the labor force as a whole; see Figure 3). The mean age of female temporary employees is 34, compared with 37 for their non-temporary counterparts.[3] In addition, while 44 percent of female temps are "married, not separated" as compared with 49 percent of the control group, the difference in proportion is not statistically significant. This is in contrast to the difference in marital status between male temporary and non-temporary workers; 30 percent of the former as compared with 73 percent of the latter are "married, not separated." This difference is significant at the .005 percent level (see Table 2). Also, male THS workers are much younger (32 versus 39) than other male workers. For women, both the age difference and the statistical significance of the age difference between temporary and non temporary workers is smaller.

Coupled with marital status differences between male THS workers and others (non-THS workers), the age difference suggests that for men, THS employment is undertaken when they are young and single. Because female THS employers differ little from all female workers on average, women appear to be equally likely to engage in THS employment at all stages of their life cycles. Temporary employment thus appears to be a different life cycle phenomenon for men and women (Lapidus, 1989).

Choice Versus 'Nothing Left to Choose'

Whether the gender composition of the THS industry reflects worker preferences, or whether it is the result of the creation of an increasing number of low-wage/low opportunity jobs and the subsequent rationing of those jobs to women through discrimination in the labor market is difficult to test directly. On the one hand, women, especially married women, may seek temporary work in order to be able to arrange flexible work schedules. On the other hand, overrepresentation of those who have traditionally occupied a subordinate position in the labor market may indicate that employment in the THS industry falls to those with the least market power, those who are often viewed as less desirable as full-time permanent workers (women, minorities, mothers of young children, etc.) by employers. Since temporary workers might be denied access to 'a living wage' and to opportunities for mobility and training, public intervention into this market may be indicated.

According to Wayne Howe (1986) of the Bureau of Labor Statistics, the gender and age profile of the industry is not surprising because women and young persons are more likely than others to experience transitory conditions, e.g. entering or leaving the labor force gradually. Howe states that the concentration of women in the THS industry (2/3 as compared with 2/5 of all wage and salary jobs) "clearly reflects the benefits offered to many women by the temporary help supply service industry, particularly the combination of flexible work schedules and the opportunity to acquire needed experience and job market exposure. . . . Women with family responsibilities are particularly attracted to temporary employment because it provides the flexible work schedules that allow them to reconcile work outside the home with family commitments" (1986).

If Howe's formulation (and the widespread view that women choose temporary jobs for flexibility) is correct, female THS employees should be more likely to be married and/or mothers than are female permanent employees. In addition, the availability of temporary employment should draw women into the labor force who would otherwise not be.

Using data from the May 1985 CPS, Lapidus (1988) tests the hypothesis that women with family responsibilities chose temporary employment based on those responsibilities. In a logit analysis based on maximum likelihood estimation techniques, the family characteristics of women workers failed to predict whether the worker would be employed by a temporary help services firm. Female THS employees were found to be indistinguishable from other women workers along the dimensions of marital status, presence of other earners, and age of youngest child. Additionally, female THS employees differ along the dimension of their marital status, age of children, and level of education from a sample of women *out* of the labor force. Thus female THS workers are more like other female workers than they are like female nonworkers. The hypothesis that the existence of the industry increases female labor supply is not supported. Comparable tests were conducted for the male labor force. For male employees, such family characteristics as marital status and presence of children *did* affect the likelihood of their being employed in the THS industry: married men and fathers were *less* likely to be THS employees.

Other data support the argument that the desire for part-time employment, at least in the form of part-day and/or part-week schedules, does *not* appear to be fueling the growth in temporary help. Seventy-one percent of all female THS workers in the CPS sample reported that they either worked full time or were working part-time involuntarily. In addition, two thirds of all temporary workers reported that they usually worked eight or more hours per day and four-fifths reported working a regular day shift (Lapidus, 1988). Due to the cross sectional point-in-time nature of the data, it is not possible to determine the extent to which the possibility of part-year work is contributing to the supply of temporary workers.

Another possible explanation for why women are overrepresented in the THS industry is that the industry has a large number of administrative support jobs (a category which includes clerical workers) and women occupy a disproportionate number of these jobs. It is likely that *ceteris paribus* jobs without firm-specific human capital requirements are more likely to be filled by temporary workers, or more generally, by workers without long term attachments to the firm. Is there something intrinsic to clerical work, particularly in terms of firm-specific versus more general human capital requirements, that can explain its overrepresentation in THS employment? If so, then perhaps the gender composition of THS employment merely reflects underlying patterns of occupational segregation and therefore does not require policy interventions specific to the industry.

This proposition is difficult to test. There does not, however, appear to be a *prima facie* case for the contention that clerical work has a lower firm-specific to general human capital ratio than does, for example, welding. Advocates of pay equity have pointed to bias in skill classification based on the gender of the worker, thus making skill assessment particularly difficult in the case of a predominantly female occupation (Treiman and Hartmann, 1981). In addition, the time trends in the growth of THS employment in Figure 1 do not match the trends in the growth of clerical work. The THS industry experienced its most rapid growth when the growth in clerical work was slowing (Hunt and Hunt, 1986). Another indication that the growth rate in the THS industry is demand rather than supply driven is that THS firms report that 90 percent of their advertising budget is spent on recruiting workers.

In our view, the racial composition of the THS industry is a further cause for concern. The more disadvantaged members of the labor force, may not be choosing temporary work so much as being relegated to it because the better jobs are taken by others (white males). As Table 2 shows, one fifth of all THS employees are black, about twice the proportion of blacks in the work force as a whole. The racial disproportion is greater for men than for women (see Figure 4). That the industry is made up of workers who are disproportionately young, female, and black is at least cause for further investigation of whether those employed in the industry are there by choice.

Pay and Benefits

Pay and benefit levels also suggest that it is the more vulnerable members of the labor force who are being drawn to temporary employment, and that the growth of temporary work represents employer demand rather than worker preferences. According to Lapidus (1988), women temporary workers earned somewhat less than a random sample of all other women workers ($5.92 versus $5.96 per hour, respectively) while male temporary workers fared substantially worse than others ($5.39 versus $10.02 per hour). In a September 1987 Wage Survey of the Temporary Help Supply industry, the Bureau of Labor Statistics (1988) found that the pay levels of temporary workers were substantially below those of full-time permanent workers in other industries in the same geographical area. In assessing the availability of benefits, the Bureau's investigators found that about two fifths of the temporary workers were employed by temporary help firms that provided paid holidays, three-fourths by firms that offered paid vacations, and one-fourth in establishments that provided at least part of the cost of medical coverage. Since all of the companies required a minimum number of hours for benefit eligibility, however, it is not known how many workers actually received benefits. The report does state that due to their intermittent work schedules, temporaries often have a more difficult time than do the permanent staff of these companies in meeting eligibility requirements related to length of service (U.S. Bureau of Labor Statistics, 1988).

Temporary Help Firms as a New Employment Agency

Although the preponderance of women and minorities among the THS workforce may be a cause for concern among policy makers, it does not follow that the temporary help services industry should be blamed for providing women and minorities the opportunity of employment, which they might not otherwise have. Indeed, it may even be the case that the THS industry is becoming a major screening and recruitment tool for employers. (That THS employment appears to be becoming less cyclical is consistent with this hypothesis.) Job candidates that the employer may view as coming from a potentially high-risk pool can be screened during a temporary appointment and possibly offered permanent employment with the firm. Alternatively, employees may use temporary work assignments to screen employers, learn about jobs, make themselves and their abilities known to employers, and so on.

Unfortunately, there are no definitive data available to test these possibilities. It is not known how many temporary workers move on to permanent jobs at their placements or how long they remain as temporary workers before moving on to more permanent employment. Sasso's claim that over 6 million hold temporary jobs during the year suggests high turnover in temporary firms, which could be the result of many workers moving into permanent jobs and needing to be replaced in the THS firms. (The same high turnover, however, could also be explained by a tendency for temporary workers to move in and out of the labor force or to move between THS firms.) In a Bureau of National Affairs survey of 223 firms and agencies about alternative staffing practices (BNA, 1988), a relatively small proportion of firms reported using temporary employment as a screening or recruiting device, and one employer noted that its unauthorized use for that purpose subverted the company's affirmative action plan.[4] Then, too, if women and minorities are subject to discrimination in the larger labor market, there is no a priori reason to believe that THS firms do not incorporate bias in the placement process. Minority women may be more likely to be placed in back office clerical jobs, for example, while white women may be more likely to receive the better clerical assignments, but still be less likely than white men to receive more professional assignments.

Virtually no systematic data are available on the assignments of temporaries that would allow us to explore these issues. Unpublished results of a preliminary survey by Manpower Temporary Services of a nationally representative group (100 respondents out of 304 surveyed) of its temporary workers who had signed up for at least one training module in office automation skills (offered free of charge but on the employee's time) show that a substantial portion of temporary workers do find permanent placements. Fifty percent of those surveyed were at permanent positions within one year of training; approximately three-fifths of those believed that their temporary experience and the Manpower-provided training helped in finding a permanent job. Sharon Canter, Director of Strategic Information, reports that ordinarily about 30 percent of their temporary workers leave to find permanent jobs, so that participating in the skills program appears to enhance their ability to find regular employment (Canter, 1989).

While temporary help firms can reasonably claim that they may be creating employment opportunities for people who would not be employed otherwise, the conditions of that employment and its potential tendency to displace full-time job creation may nevertheless warrant the attention of policy makers. And that women and minorities are more likely to be temporary workers suggests that better enforcement of equal employment opportunity is needed in the rest of the labor market.

CONCLUSIONS FROM THE RESEARCH

On balance, what can we conclude about the nature and growth of temporary jobs? And what can we conclude about how desirable such temporary employment is? What can we guess about the future direction of this phenomenon? In arriving at our conclusions, we should first note that data are not available for many of the aspects of temporary jobs that are of most interest (for example, the length or nature of assignments) and that what data are available pertain to the employees of temporary help services firms, and not to other types of temporary workers (such as direct hire temporaries and those hired through contract arrangements). With this major caveat stated, we nevertheless proceed to offer several judgments.

First, the phenomenon of temporary work is growing nearly ten times faster than total employment (21.1 percent versus 2.3 percent per year during the past ten years). It is also changing. During the last recession, temporary work did not drop as markedly as it had in earlier recessions, suggesting that use of temporary employees may be becoming something of a permanent arrangement with many employers.

Temporary workers are being "sold" in the business press as a solution to staffing some undesirable jobs of a permanent nature (such as office mailroom jobs), and a "core and periphery" strategy is being touted as a way to provide increased job security for one's most valuable employees. The largest firms are more likely to use temporaries.

Second, at the same time, the less cyclical nature of temporary employment suggests that "flexibility" may not be its most desirable characteristic from the point of view of the employer. Lower cost (especially in terms of benefits and hiring and separation costs) or acquiring needed skills (eg. word processing) may be equally important. But this cost-cutting use, especially, may not be desirable in the long run, even from the point of view of business itself. If such temporary staffing patterns prevent the training and investment in workers that is needed to make a better long-run adaptation to changing employment requirements, the short-cut of using temporary workers may be reducing, rather than increasing, productivity growth over the long run.

Third, the phenomenon seems to be more demand-led than supply led. The flexibility temporary employment allows appears to be more desired by employers than employees. Several factors support this conclusion. Although women are more likely to be temporary workers than men, and it has often been assumed women prefer these jobs for their flexibility, actually women who are temporary workers do not differ in their family characteristics from all other women workers. Men's share of temporary work has been growing during the same period that men's real wages have been falling, and real family incomes have stagnated, suggesting again, that workers may take these jobs by default not out of choice. Moreover, the vast majority of temporary workers report working full work days and full work weeks, and half who work less than full-time report themselves as involuntary part-time workers. Finally, THS firms spend a much higher proportion of their advertising budgets recruiting workers than recruiting clients.

Fourth, on most objective measures, temporary work is less desirable from the point of view of the employee than regular work (except for the apparently small proportion who genuinely desire the lesser labor market commitment temporary work allows and are willing to pay for it in foregone compensation). Wages are clearly lower, especially for men, and benefit coverage is limited compared to the nontemporary full-time worker. The cost to the employer, even after paying the agency fee, is still less than would be the cost of hiring a new employee.

Fifth, the groups that are thought to have been historically disadvantaged in the United States and that are protected by civil rights laws are overrepresented in temporary jobs, again suggesting that temporary work is less desirable and represents a reasonable employment alternative only for the most economically vulnerable.

Sixth, whether temporary jobs are replacing regular jobs or substituting for regular job growth is unclear. But the more rapid growth of THS jobs and its potentially less cyclical nature, as well as the many cases cited by unions of job replacement, all point to the strong possibility that "bad" jobs may be driving "good" jobs out of circulation.

What possible futures do we see for temporary job growth? Left unregulated, we think it likely that more firms, especially large firms, will attempt to convert larger parts of their internal labor markets to casual markets staffed by temporaries, and will turn increasingly to the use of contract labor and labor leasing firms for such lower-level jobs as cleaning, guard service, and food service, primarily to contain costs. Ironically, legislation such as the ERISA requirements for pension vesting after five years and the 1986 Tax Reform Act mandating no discrimination in fringe benefits may contribute to the desire for large firms to downsize their permanent work forces.

While committed free-market economists might mutter, "I told you so," and advocate deregulation, a clear alternative, assuming the goals of those Acts remain sound, is to regulate further in order to close the loopholes.

We are concerned that the core-and-ring staffing strategy will look especially attractive to employers because of anticipated demographic patterns. Eighty percent of labor force growth between now and the year 2000 and beyond will consist of women, minorities, and immigrants. It is not difficult to imagine that the core will be reserved primarily for white males, while the ring will be staffed by everyone else. Public and private labor market policies that allow this to happen will be doing a disservice to the nation's long-term productivity growth, a growth which requires everyone to be able to participate in the labor market to their full potential.

Another entirely different labor market future presents itself: labor shortage. If economic growth continues steadily and modestly, the U.S. will be facing severe labor shortages. In that context the supply of temporary workers will likely dry up, their cost will be driven up, and they will be used by employers only to fill the real emergencies that do occur in all businesses. The problem of temporary work will solve itself.[5] But this scenario also suggests some changes in current policy. Businesses that have come to rely on temporaries and have restructured their work accordingly will not be able to operate in a new environment where securing the loyalty of one's employees will once again become paramount.

Economically speaking, the use of some temporary arrangements seems sensible; it increases the ease, and reduces the cost, of responding to changes in demand, making the economy more adaptable and flexible. But where temporary arrangements are being used as a short cut to avoid the human resource investments that would guarantee flexibility and adaptability in the long run, they are clearly detrimental. And from the worker's viewpoint, when temporary work offers employment only under inferior conditions and destroys rather than supplements regular full-time opportunities, it clearly endangers the worker's standard of living.

POLICY ISSUES

The policy options offered in the literature address two major concerns: concerns about the conditions of temporary work itself and concerns about the elimination of full-time jobs (or lack of growth) and their replacement by temporary work. Most of the suggested remedies would make employing temporary workers more costly; they would both discourage the employment of temporary workers and improve the conditions of those who remain in temporary work.

The central situation of temporary work, however, is an unusual one, and the policy levers available to address the situation are not easily identified. In temporary work, employees who work side-by-side in a work place actually have two different employers. As suggested above, the implications of the growth of this phenomenon for employee-employer relationships, for the quality of working life, and for morale on the shop or office floor are important and may require policy intervention. It is not, however, clear--in every case--to which employer the remedy should be addressed. In addition, the phenomenon (at least if limited to THS employees), while growing rapidly, is still relatively small, and policy "overkill" may be undesirable. Nevertheless, the seriousness of the issues raised--particularly the potential for bad jobs to drive out good jobs and for the most economically vulnerable to be concentrated in temporary jobs--suggests that policy alternatives be thoroughly considered, before it is decided that nothing need be done just yet.

Reporting Requirements

One policy recommendation we believe is clearly warranted is that both temporary help services firms and organizations that use temporary help be required to report on the number, type, and duration of temporary help assignments. For client organizations it is important to know the proportion of their labor force that is temporary (including all categories of temporary work). Data on the wages, benefits, race, sex, and age of the workers would also be useful to investigate the social desirability of increased temporary employment and its potential to displace full-time jobs. Such a reporting requirement, itself, might marginally discourage hiring temporaries, but more importantly it would provide the information base necessary to evaluate the costs and benefits of temporary work and test hypotheses about corporate restructuring and core-and-ring staffing strategies. At least one private sector employer is voluntarily gathering such information on its own usage of temporaries (and for all types of temporaries) in order to monitor its equal employment opportunity situation (Belous, 1988).

More and better data on temporary work should be also gathered through the Current Population Survey. The special May 1985 supplement on temporary work should become a regular feature of the survey; questions should be asked about wages and benefits and about employment activity in the prior year.

Regulating the Quantity of Temporary Work

The quantity of temporary work could be regulated more directly (not only indirectly through raising the cost), much as home work is in some industries. The number of temporary (whether THS, direct-hire, or contract) workers could be limited to a proportion of the employer's workforce on the regular payroll.

Regulating the Quality of Temporary Work

While the quality of life and worker morale issues may not be easy to address, we believe they are critically important for such issues as long-term productivity growth. One limited remedy (because such a small proportion of the U.S. labor force is unionized) would be to require that temporary employees be included in bargaining units at their client employers and covered by collective agreements in place. This is especially an issue where contracting out is used to subvert existing labor agreements.

Improving unemployment insurance coverage for temporary (and part-time) workers needs to be explored. Little is known now about whether and how temporary workers currently qualify for unemployment insurance, but many states set annual earnings eligibility minima and many also disqualify those who limit their availability to part-time work (9to5, 1986). Nor do we know how temporary workers are counted in unemployment statistics. Recent discussions with staff at the Bureau of Labor Statistics suggest, for example, that a temporary worker without full assignment for the week would most likely be classified as "employed part-time involuntarily" if interviewed on a day she or he was without work.

Other important policies that should be considered are those that would regulate the pay and benefits of temporary workers. Temporary help services firms offer fewer benefits than other firms on average. Short of banning temporary work entirely or requiring all employers to provide minimum health insurance (or instituting a national health service) and other benefits, most of the leverage for public policy would seem to be on the client employer not the temporary firm.

A client employer could be required to give temporary employees automatic access to its benefits after a certain period of time (e.g. four weeks). Currently, under the Tax Equity and Fiscal Responsibility Act (TEFRA), leased employees automatically have access to the client employer's pension benefits (where they exist) if they work beyond 12 months or 1500 hours (9to5, 1986). A client employer could also be required to insure pay parity for all temporary workers, including THS workers (in which case the employer would have to insure that the THS firm pays the worker the same wage a regular employee would earn), direct hire temporaries, contract workers, and part-time workers. Current ERISA requirements mandate employers to include part-time workers who work more than 20 hours per week in pension plans, and the 1986 Tax Reform Act mandates non-discrimination in benefits among employees, including part-time employees who work more than 20 hours per week. Additional legislation of this type could provide protection for temporary workers as well as part-time workers. Of particular importance for temporary workers, because the majority of them are women, would be equal access to parental leave and child care benefits.

What Can Businesses Do?

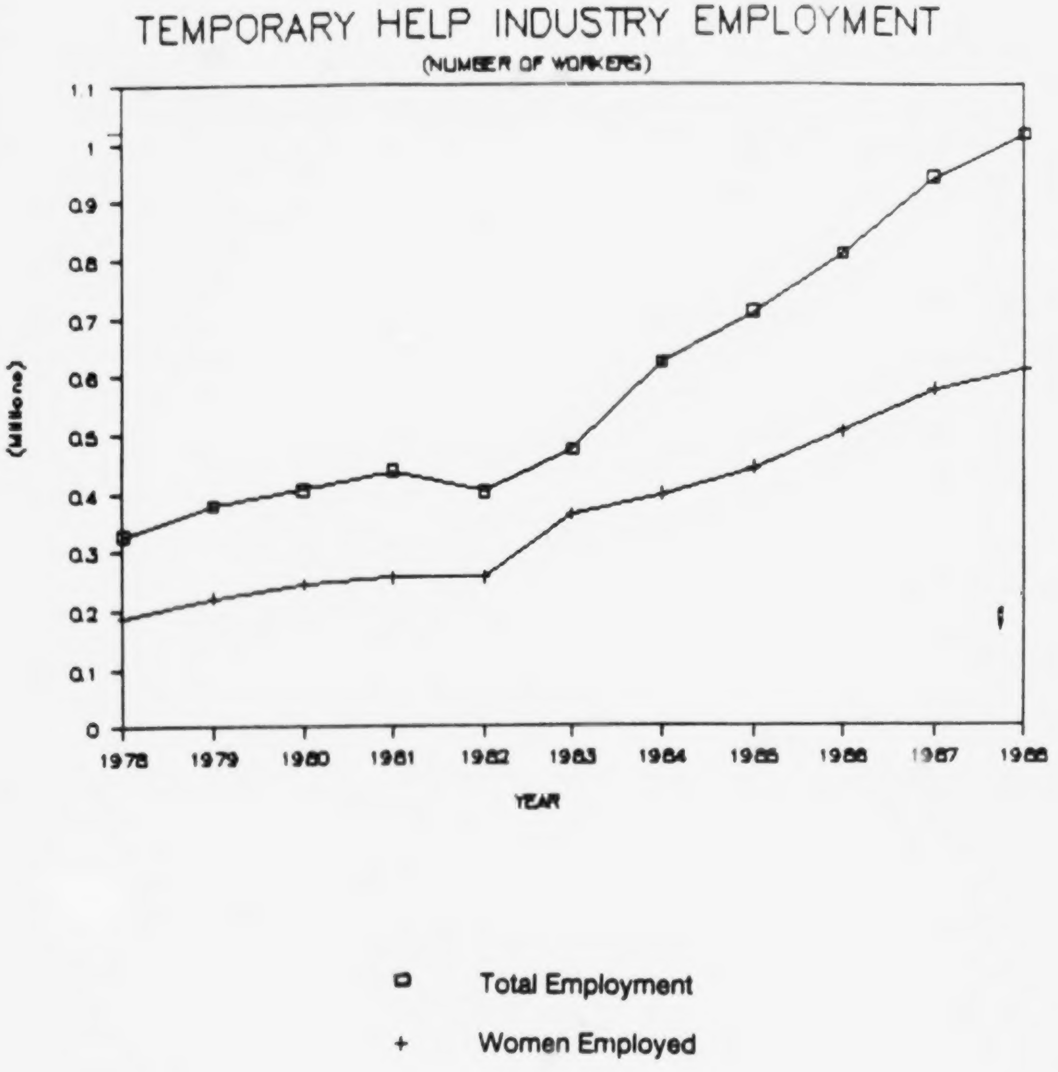
Increased reliance on temporary workers may be an inefficient human resource policy. While appearing to meet short term needs for flexibility, using temporary help may prevent adoption of strategies that are more cost effective in the long run. In the long term, a more flexible worker is one who has job security and has training to take on a variety of tasks. In an anticipated climate of labor shortage, the source of temporary workers may also dry up, so that those businesses that have relied upon this strategy will find themselves without alternatives. Businesses should begin to think now of some other, more desirable forms of meeting their needs for extra help.

One alternative might be increased reliance on overtime for secretarial-clerical jobs. It is curious that temporary help is so overused in clerical occupations. Patriarchal norms mandating lower pay and greater family responsibilities for women may be historically responsible for the lack of overtime offered to (or accepted by) women. Yet today many women must support themselves and dependents, and might welcome increased overtime pay. Such a strategy might require more attention to public and private policies that can help families with dependent care.[6]

In general it would be useful for employers to keep in mind that little about work arrangements is technologically determined. Much is determined by custom and tradition that may--in this period of economic transition for the United States--require careful scrutiny.

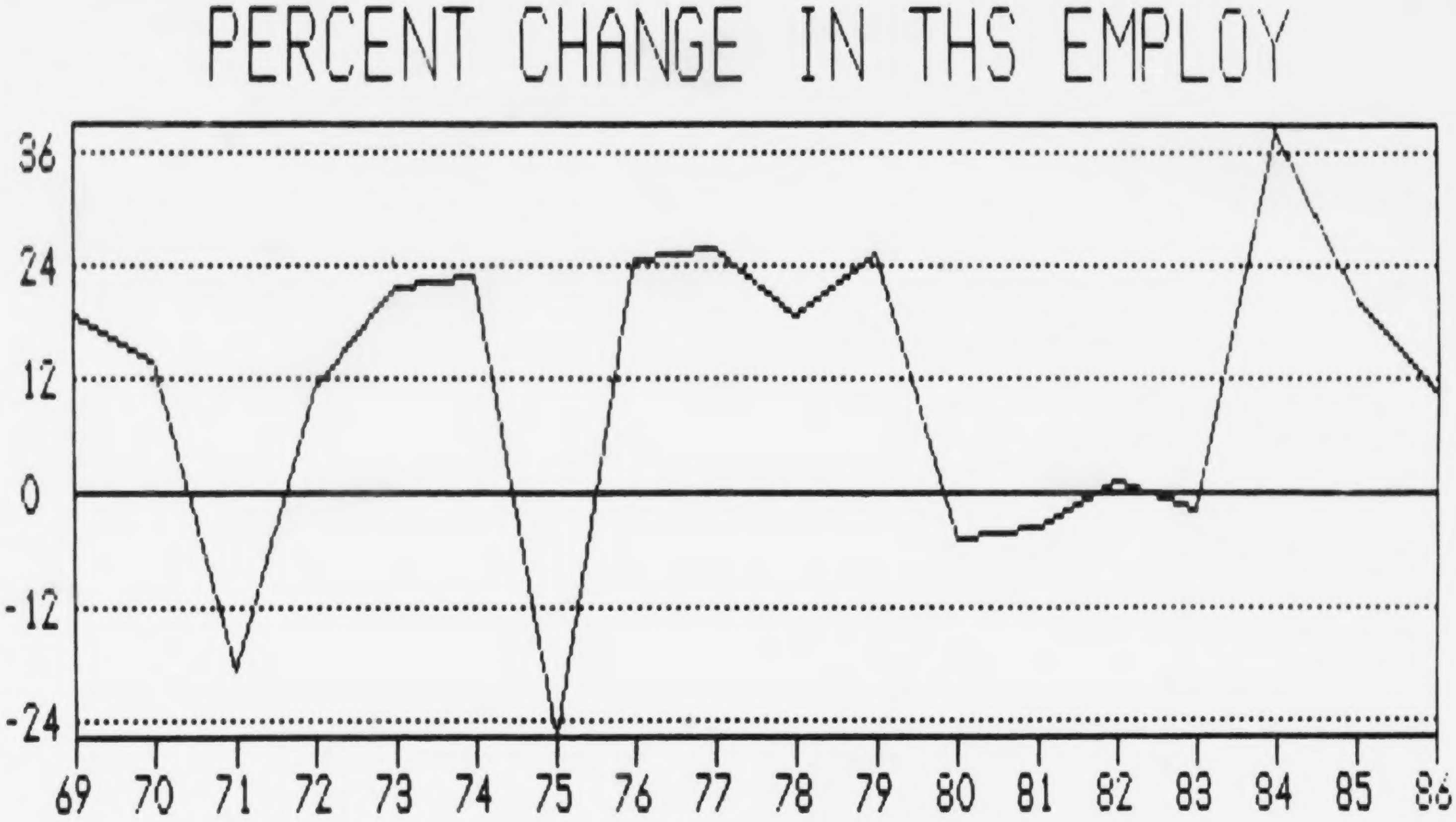
In our judgment, the phenomenon of temporary work is of enough concern to warrant policy attention. Improved data collection by federal agencies and new reporting requirements of both the temporary help services firms and the client firms are absolutely essential. Next in priority order on our list would be improved benefits, including health insurance--by requiring comparable coverage by the client employer--and improved coverage under unemployment insurance. Finally on our short list would be requiring the inclusion of temporary (and part-time) workers in bargaining units where workplaces are unionized.

Figure 1



SOURCE: Employment and Earnings and unpublished data, U.S. Bureau of Labor Statistics. Current Establishment Survey data. Numbers for 1978-1981 calculated by the authors by assuming that THS industry employment comprised the same proportion of Personnel Supply Services during the period 1978-81 as it did in 1982-83.

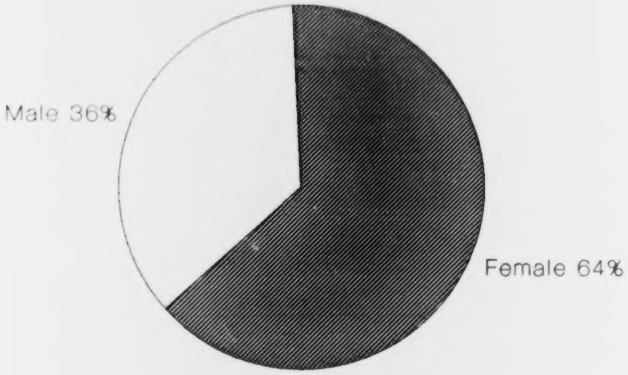
Figure 2



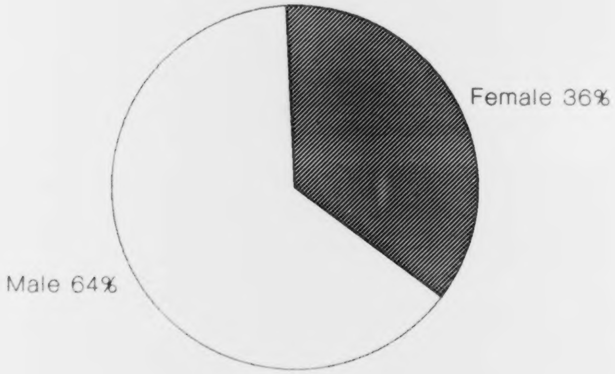
SOURCE: County Business Patterns, various years. Calculated by Lapidus (1989)

FIGURE 3

TEMPORARY WORKERS BY GENDER



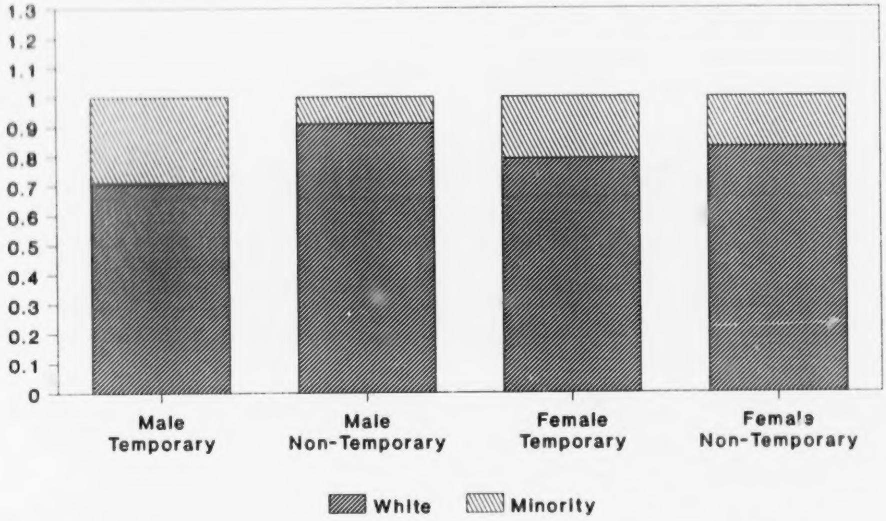
NON-TEMPORARY WORKERS BY GENDER



SOURCE: Calculated by the authors from May 1985 CPS Microdata tapes.

Figure 4

TEMPORARY VS. NON-TEMPORARY WORKERS
By Race



SOURCE: Calculated by the authors from May 1985 CPS Microdata tapes.

Table 1. OCCUPATIONAL CATEGORIES OF TEMPORARY HELP SUPPLY EMPLOYEES AND OTHERS, TWO-DIGIT OCCUPATIONAL CODE

OCCUPATION	WOMEN		MEN	
	THS %	OTHERS %	THS %	OTHERS %
Executive, Admin., Management	3.7	7.6	3.8	14.2
Professional Specialty	7.6	14.3	6.9	9.2
Technicians & Related Support	2.1	2.0	8.3	3.2
Sales	6.5	14.5	1.2	10.9
Admin. Support, inc. Clerical	61.7	29.7	10.6	5.5
Private Household	1.4	3.6	0.0	0.0
Protective Service	0.0	0.2	1.9	1.9
Other Service	10.5	16.2	6.2	5.2
Precision Prod., Craft & Repair	0.7	1.4	11.9	22.5
Machine Oper., Assemblers, & Inspectors	2.1	6.8	7.4	6.8
Transportation & Material Moving	0.7	0.4	2.9	8.1
Handlers, Equipment Cleaners	1.6	1.8	29.0	5.4
Farming, Forestry, & Fishing	1.4	0.5	10.0	5.9
(Sample Size)	(160)	(372)	(84)	(684)

SOURCE: May 1985 Current Population Survey. Calculated by Lapidus (1989).

NOTE: OTHERS is a random sample of men and women in the labor force (May 1985 Current Population Survey).

Table 2. DEMOGRAPHIC CHARACTERISTICS OF THS EMPLOYEES AND OTHER MEMBERS OF THE LABOR FORCE

THS EMPLOYEES	% MINORITY	AGE	# OF CHILDREN	% MNS
MALE (36%)	29.0	32.0	1.17	30.0
FEMALE (64%)	21.0	34.0	1.59	44.0
	(1.11)	(0.73)	(15.63)	(2.33)
MEN				
THS (n = 84)	29.0	32.0	1.17	30.0
OTHERS (n = 684)	9.0	39.0	1.73	73.0
	(6.00)	(3.37)	(28.00)	(8.60)
WOMEN				
THS (n = 160)	21.0	34.2	1.59	44.0
OTHERS (n = 372)	17.0	37.3	1.52	49.0
	(1.11)	(1.87)	(5.05)	(1.07)
BOTH SEXES				
THS	23.6	33.5		
OTHERS	12.1	38.4		
	(4.19)			

SOURCE: Data are sample means (except percent where noted) calculated from May 1985 Current Population Survey, by Lapidus (1989).

NOTES: Numbers in parentheses are t-statistics.

MNS = Married, Not Separated

OTHERS is a random sample of men and women in the labor force.

NOTES

1. The lower estimate from the Current Population Survey, which is a household survey, may be the result of its subjective nature. The structure of the questionnaire was such that the question on whether or not the respondent's salary was paid by a temporary help agency was only asked of those who responded yes to a prior question about whether their job was temporary. Thus, a person who viewed their arrangement with a THS firm as more or less permanent may not be included as a THS employee in the survey. In contrast, the monthly Current Employment Statistics are derived from the payroll records of a sample of establishments. NATS estimates are based on data reported by their membership.

2. Data for 1986 are not strictly comparable with previous years due to changes in reporting (Bureau of Labor Statistics, 1988).

3. The characteristics of non-temporary workers are calculated by Lapidus (1989) from the May 1985 Current Population Survey microdata tapes. A random sample of the labor force was drawn from that survey in order to provide a comparison sample.

4. One large western manufacturing firm reported: "Supervisors tend to misuse the temporary arrangements to screen temporary employees with the thought of permanent employees in mind. This practice subverts our affirmative action goals" (BNA, 1988).

5. These two scenarios are not mutually exclusive. Labor shortage combined with a basic core and ring staffing strategy could further exacerbate the bifurcation of the labor market.

6. Such assistance could include programs to teach men to cook dinner and take care of children.

APPENDIX

DATA SOURCES AND DATA NEEDS

DATA SOURCES

Government Data

Current Population Survey, May 1985.

The Current Population Survey is a monthly household survey carried out by the Bureau of the Census, and used by the Bureau of Labor Statistics (BLS) for monthly and annual employment data. It includes the civilian noninstitutional population 16 years and older and is based on data collected by personal interview of a sample of 59,500. In May of 1985 the following one-time supplemental question was asked: Is the respondent's salary paid by a temporary help supply firm? The survey design provides a national data set with extensive demographic and economic data on THS workers for a single point in time.

Current Employment Statistics, various years.

Current Employment Statistics (CES) is a program of monthly establishment surveys conducted by State employment agencies in cooperation with the BLS. It is a mail survey to a sample of 150,000 employer units. Data cited are reported in Employment and Earnings (a U.S. Department of Labor monthly), Table B2: Employees on non-agricultural payrolls by detailed industry. Data for employment levels in the temporary help industry (at the four-digit level) are available from 1982-1988. For the period 1978-83 (and other years), three-digit industry employment data are available for personnel supply services. To provide a time series of THS employment levels for

1978-1988, we applied the average proportion of THS employment to total employment in personnel supply services that obtained in the years 1982-1983 to personnel supply services employment in the years 1978 -81.

County Business Patterns: Establishment data is collected by the Bureau of the Census in two ways. For multi-unit companies, report forms are sent to the companies and returned to the Census Bureau by mail. Full compliance is mandatory. For single unit companies, data are collected from the Internal Revenue Service. This data set provides the longest consistent time series available; it includes the number of employees and first quarter payroll for the industry (at the four-digit level) since 1968.

Industry Wage Survey: Temporary Help Supply, September 1987.

The Bureau of Labor Statistics sample establishments engaged primarily in supplying temporary help to other businesses (industry 7362 in Standard Industrial Classification Manual). The sample was selected from establishments employing 50 workers or more. It is a one-time survey and includes wage data by occupation in this industry for the nation as a whole and for 26 large metropolitan areas. Benefit data report the availability of benefits and eligibility requirements; they do not provide information on the numbers of workers actually receiving them.

Private Surveys

Bureau of National Affairs: Survey conducted in 1986 of personnel executives; 442 responded to questions about their current and projected use of four categories of flexible staffing methods: agency temporaries, short-term hires, contracting out, and on-call pools. The Bureau again surveyed 223 organizations in 1988.

Dun and Bradstreet Corporation: Survey of 5,000 firms to assess intensity of reliance on temporary and part-time workers. Data available for 1986 and 1987 by firm size and industry sector.

American Management Society Foundation: Surveyed 500 American Management Survey members; 289 companies reported their usage of temporaries, part-time and contract employees.

Temporary Help Supply Service and the Temporary Labor Market, Olympus Research Centers, prepared for Employment and Training Administration by Donald Mayall and Kristin Nelson, 1982. Survey was two-fold: in-depth interviews were conducted of employers in ten industrial sectors in two metropolitan areas; and mail and telephone survey of a national sample of 1200 randomly selected firms in six industries in 20 SMSAS.

DATA NEEDS

Existing data sources do not permit investigation into three important questions: what happens to temporary workers over time; what is the nature of temporary work assignments; and what is the extent of temporary employment in the form of on-call pools, short-term hires, and contracting out. The first question requires a longitudinal study of prior and subsequent work experience of temporary help supply services employees. Do workers use temporary help as an entre into permanent placement or as a source of casual employment? Do they receive useful training on the job? Is the phenomenon of career temporaries increasing? To our knowledge no longitudinal survey of workers now available identifies temporary workers as such.

The second area of inquiry, assessing the nature and magnitude of the various forms of short-term employment relations, could be addressed by the collection of establishment data. Firms could be asked, in a government survey, to report their degree of reliance and reasons for utilization of alternative staffing arrangements, the nature and length of assignments, and the disposition of the assignment. Ideally this information would enable the investigation of whether temporary jobs are displacing long-term employment relations, whether aspects of temporary jobs contribute to acquiring human capital or more permanent employment, or whether the conditions of employment are contributing to the further development of two-tier internal labor markets.

REFERENCES

Abraham, Katharine G. "Flexible Staffing Arrangements and Employers' Short-Term Adjustment Strategies." Working Paper No. 2617, Cambridge, MA: National Bureau of Economic Research, Inc., 1988.

Applebaum, Eileen. "Restructuring Work: Temporary, Part-Time, and At-Home Employment." In Hartmann, et al. (eds), Computer Chips and Paper Clips. Volume II. Washington, DC: National Academy Press, 1986a.

Applebaum, Eileen. "The Potential Dark Side of the Future Service Economy." Paper presented at Economic Issues Conference. Washington, DC: Economic Policy Institute, 1986b.

Belous, Richard S. "Contingent Workers and Equal Employment Opportunity." Paper presented at the Industrial Relations Research Association Annual Meetings, New York City, 1988.

Berger, Suzanne and Michael J. Piore. Dualism and Discontinuity in Industrial Societies. Cambridge: Cambridge University Press, 1980.

Bluestone, Barry, Patricia Hanna, Sarah Kuhn, and Laura Moore. The Retail Revolution: Market Transformation, Investment and Labor in the Modern Department Store. Boston, MA: Auburn House Publishing Company, 1981.

Bluestone, Barry and Bennett Harrison, "The Great American Jobs Machine." Washington, DC: U.S. Congress Joint Economic Committee, December 1986.

Bolt, James F. "Job Security: Its Time Has Come." Harvard Business Review 61(December 1983).

Bureau of National Affairs. The Changing Workplace: New Directions in Staffing and Scheduling. Rockville, MD: The Bureau of National Affairs, 1986.

Bureau of National Affairs. "Special PPF Survey Report: Part-time and Other Alternative Staffing Practices," Bulletin to Management 39:25, Pt.II (June 23, 1988).

"The Hollow Corporation," Business Week (March 3, 1986).

Canter, Sharon. Unpublished survey results, Manpower Termporary Services, 1989.

Carey, Max L. and Kim L. Hazelbaker, "Employment Growth in the Temporary Help Industry," Monthly Labor Review (April 1986).

Doeringer, Peter B. and Michael J. Piore, Internal Labor Markets and Manpower Analysis. Lexington, MA: DC Heath, 1971.

Dun and Bradstreet Corporation. "Dun's 5,000 Survey Shows Continued Intensive Use of Temporary and Part-Time Workers by U.S. Businesses." New York, NY: Economic Analysis Department, Dun and Bradstreet Corporation, 1987.

Fernberg, Patricia M. "Changing hands of Temporary Help," Modern Office Technology (May 1988).

Freedman, Audrey. "Jobs: Insecurity at all Levels," Across the Board 23(January 1986).

Gannon, Martin J. "A Profile of the Temporary Help Industry and Its Workers," Monthly Labor Review (1974).

Gannon, Martin J. "An Analysis of the Temporary Help Industry," Labor Market Intermediaries. Special Report No. 22. Washington, DC: National Commission for Manpower Policy, 1978.

Gannon, Martin J. "Preferences of Temporary Workers: Time, Variety and Flexibility," Monthly Labor Review (August 1984).

Harrison, Bennett and Barry Bluestone. The Great U-Turn: Corporate Restructuring and the Polarizing of America. New York: Basic Books, Inc., 1988.

Hartmann, Heidi I., Robert Kraut, and Louise Tilly, eds. Computer Chips and Paper Clips: Technology and Women's Employment. Washington, DC: National Academy Press, 1986.

Howe, Wayne J. "Temporary Help Workers: Who They Are, What Jobs They Hold," Monthly Labor Review (November 1986).

Hunt, Allan H. and Timothy L. Hunt. Clerical Employment and Technological Change. Kalamazoo, Michigan: W.E. Upjohn Institute for Employment Research, 1986.

Kehrer, Barbara and Natan Szapiro. "Study of the Utilization and Effects of Temporary Nursing Services." Princeton, New Jersey: Mathematica Policy Research, Inc., 1983.

Kosters, Marvin H. and Murray N. Ross. "The Distribution of Earnings and Employment Opportunities: A Reexamination of the Evidence." Washington, DC: American Enterprise Institute, September 1987.

Lapidus, June. "The Temporary Help Industry and the Operation of the Labor Market." Unpublished Ph.D. Dissertation. University of Massachusetts-Amherst, forthcoming, 1989.

Lapidus, June. "An Empirical Analysis of the Supply Side of the Temporary Help Industry." Unpublished Paper. Amherst, MA: University of Massachusetts, 1988.

Long, Jeffrey E. "The State of Contract Labor: 1988." Management World (June 1988).

Mangum, Garth, Donald Mayall, and Kristin Nelson. "The Temporary Help Industry: A Response to the Dual Internal Labor Market," Industrial and Labor Relations Review 38:4 (July 1985).

Mayall, Donald and Kristin Nelson. "The Temporary Help Supply Service Industry and the Temporary Labor Market." Salt Lake City, Utah: Olympus Research Corporation, 1982.

Nelson-Horchler, Joani. "The Trouble with Temps," Industry Week (December 14, 1987):53-57.

9to5, National Association of Working Women. Working at the Margins: Part-Time and Temporary Workers in the United States. Cleveland, Ohio: 9to5, National Association of Working Women, 1986.

Sacco, Samuel R. "The Temporary Help Service Industry." Alexandria, Virginia: National Association of Temporary Services, undated.

Smith, Robert S. Analysis of Labor Market Adjustments in the Clerical Temporary Help Market: 1953 - 1960. Unpublished Ph.D. Dissertation. Stanford University, 1971.

Treiman, Donald J. and Heidi I. Hartmann, eds. Women, Work, and Wages: Equal Pay for Jobs of Equal Value. Washington, DC: National Academy Press, 1981.

Uchitelle, Louis. "As Jobs Increase, So Does Insecurity," New York Times (May 1, 1988).

U.S. Department of Commerce, Bureau of the Census. County Business Patterns. Washington, DC: U.S. Government Printing Office, 1968 - 1986.

U.S. Department of Commerce, Bureau of the Census. Current Population Survey. Microdata tapes. May 1985.

U.S. Department of Labor, Bureau of Labor Statistics. Employment and Earnings, various issues. Washington, DC: U.S. Government Printing Office.

U.S. Department of Labor, Bureau of Labor Statistics. Handbook of Labor Statistics, Washington, DC: U.S. Government Printing Office, 1980.

U.S. Department of Labor, Bureau of Labor Statistics. Telephone conversation for 1986 unionization rates, 1988.

U.S. Department of Labor, Bureau of Labor Statistics. Industry Wage Survey: Temporary Help Supply Industry, 1987. Washington, DC: U.S. Government Printing Office, 1988.

30. WORKING HOURS FLEXIBILITY

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30. WORKING HOURS FLEXIBILITY

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With the nation poised to enter the last decade of the twentieth century, ongoing changes in the composition of the American labor force have given powerful appeal to the concept of flexible work schedules. The once dominant pattern of a sole breadwinning husband, who provided the total economic support for his family and whose nonworking wife assumed all child care and other family responsibilities, demanded few departures from the standard full-time workweek (e.g., 9 am - 5 pm, Monday-Friday). Increasingly, however, the labor force has become populated with employed wives and mothers, husbands of these working women, female single parents, older workers, and workers with physical handicaps and disabilities. This new heterogeneous cross-section of workers has major responsibilities for children (including young children), sick or disabled spouses, and elderly parents or relatives. The modern worker, in short, must frequently coordinate work responsibilities with significant family and other responsibilities. Flexible work schedules offer the promise of a low-cost option for helping to manage these multiple responsibilities. This paper considers whether flexible work schedules have lived up to, or will in the future live up to, their promise of reconciling some of the potential tensions among major life domains.

Alternative Work Schedules

Numerous departures from the standard workweek have now been tried in the U.S. and overseas. Collectively they are described as alternative work schedules. They vary from the standard workweek along at least three major dimensions.

Dimensions of Work Schedules

In the first place some alternative schedules can offer variability in the amount of time a worker spends working. Part-time work, usually defined as working less than 35 hours per week, is a major example. An important distinction is frequently drawn between permanent and temporary part-time work. Job sharing, in which two people share one full-time job, is a special case of part-time work. Work sharing, in which some or all workers reduce their hours during economic downturns so that certain workers will not have to be laid off, is another special case of part-time work. Yet another variant of part-time work is voluntary reduced work-time programs (or V-time) in which employees who are formally classified as full-time voluntarily work less than a full workweek. V-time, which requires the approval of the supervisor, is frequently an arrangement of limited duration. Still another type of part-time work is peak time according to which people are hired at premium rates to work only during high volume periods. Conversely, overtime work (or extended hours) represents a departure from the standard length of a workweek in the opposite direction.

A second dimension along which schedules may vary concerns the time of day during which work is scheduled. Shiftwork is the best known example of unconventional starting and ending times. The compressed workweek, in which fewer days are worked but more hours are worked each day (e.g., four 10-hour days), likewise entails departures from typical working times. Flexitime, which allows some choice regarding starting and finishing times, also illustrates the possibility of unconventional hours. Flexiplace (also known as remote work, homework and, in certain specific cases, as telecommuting) is an option that allows workers to work at home. While strictly not a special type of work schedule, in reality it allows workers to decide when they will do their work. Part-time work, of course, also exhibits a good deal of variability as to when work is done.

The third dimension on which schedules may vary concerns the amount of control (or choice or flexibility) that workers have regarding their schedule. Shiftwork scores low on this dimension of flexibility because shift schedules are typically imposed by management and workers may have little or no choice. Only a few workers would choose a nonday shift given a full range of options. Although sometimes a schedule that workers select, the compressed workweek is likely to be an imposed selection. Quite commonly, a company or a unit within a company converts to the compressed workweek and workers are simply expected to comply. Overtime work is sometimes at the discretion of the worker and sometimes not. The same is true of part-time work. Flexitime is, by definition, a schedule partially at the behest of workers. Job sharing, V-time and flexiplace suggest high worker control; work sharing connotes the opposite.

Prevalence of Work Schedules

A 1985 government household survey provides information on the prevalence of various conventional and alternative work schedules (Flaim, 1986). Although the standard fixed workweek (40 hours, five days) remains the dominant statistical pattern, various alternative schedules register at nontrivial levels in the population. Over half of all nonagricultural wage and salary workers (53.7%) worked a 40-hour week in 1985; nevertheless, nearly one in five (18.7%) worked fewer than 35 hours per week (i.e., part-time), up from 16.4 percent in 1973 (Smith, 1986). Part-time workers are heavily represented in certain demographic categories: women, younger workers (ages 16-24), older workers (65 and over), and workers in retail trade and service industries (Nardone, 1986). Various types of compressed workweeks, although still very infrequent, have been growing at an accelerated rate (Smith, 1986). About one in six (15.9%) of all full-time wage and salary workers considered themselves shiftworkers (Mellor, 1986). Among the various shifts, the evening shift was the most common, followed by rotating, night and then split shifts. Shiftworkers were particularly likely to be male, young and black and to be found in specific occupations (e.g., protective service, food service, and health service) and industries (e.g., mining, transportation, retail trade, and personal, entertainment, and hospital services). One in eight (12.3%) of all full-time wage and salary workers reported that their work schedules permitted them to vary the beginning and ending hours of work (the essence of flexitime) (Mellor, 1986). Such flexibility in the work day was more likely to be characteristic of men, whites, and workers in managerial and professional occupations. Interestingly, schedule flexibility was more common among part-time than full-time workers and less common among those on evening, night or rotating shifts than those on regular daytime schedules. In addition, over 18 million Americans reported doing some work at home on their primary job; of these, 1.3 million persons had worked the equivalent of a full-time week at home (Horvath, 1986). Full-time non-farm home workers were likely to be female, aged 56 or older, and employed in a service industry.

Certain company-based surveys have supplemented what is known about the changing prevalence of various work schedules. According to a series of surveys conducted by the Administrative Management Society (AMS), flexitime is on the upswing (AMS, 1988). Fully 31 percent of the 260 companies surveyed had flexitime schedules in use in 1988 as opposed to 15 percent in 1977. The same survey series showed job sharing to have been on a downswing between 1987 and 1988. Such company-based surveys, however, provide no direct information on the number of workers with access to specific work schedules because the schedules used by a company are typically available only to some undetermined proportion of its workers.

Flexible Work Schedules

The concept of flexibility is really a combination of two concepts, variability and worker control. Thus, flexible work schedules are essentially a subclass of alternative work schedules, those in which schedules can vary along either or both of the first two dimensions described earlier (i.e., amount and timing of work hours) and in which a high score is registered on the third dimension (i.e., control). Flexitime is the prototypic example of a flexible work schedule but some of the other alternative work schedules also qualify (e.g., part-time work in general, and the special cases of job sharing and V-time). When workers have some say in its selection, the compressed workweek can also serve as a flexible work schedule.

In addition to the flexible schedules selected from the roster of alternative work schedules are certain personnel time policies that constitute flexible departures from the standard workweek. Most of these include sanctioned leaves such as personal days, family sick leave (with option to stay home with sick children or other sick family members) and time off to select child care. Despite the importance to workers of these leave policies, they will not be further discussed in this paper. They belong to a discussion of employee benefits, all of which cost companies money, whereas the present paper concentrates on schedule variations that need not impose significant costs on companies and may even save companies money.

TABLE I

COSTS AND BENEFITS OF FLEXIBLE WORK SCHEDULES

FLEXITIME

Benefits to Company	**Costs to Company**	**Benefits to Workers**	**Costs to Worker**
Increased labor productivity	Reluctant supervisors	Increased job satisfaction	Less overtime pay
Reduced absences and lateness	Unequal availability of flexitime to different types of workers	Easier commuting	
Lower turnover	Higher utilities and overhead costs	More and better family time	
Less overtime pay	Additional time keeping costs	Easier child care arrangements	
Easier recruiting	Labor union opposition		
Better use of production facilities	Labor law constraints		

PERMANENT PART-TIME EMPLOYMENT

Benefits to Company	**Costs to Company**	**Benefits to Workers**	**Costs to Worker**
Increased labor productivity	Opposition from labor unions	More and better family life	Lower wages and fringe benefits
Reduced absences and lateness	Supervision more difficult	Easier child care arrangements	Reduced career advancement
Lower wages	Training more expensive	Off-peak commuting	
Easier recruiting			

JOB SHARING*

Benefits to Company	Costs to Company	Benefits to Workers	Costs to Worker
Reduced absences	Higher fringe benefit costs	Better pay and fringe benefits	
Less overtime pay	Problems locating compatible partners		
Improved work coverage	Problems of coordination, communication and scheduling		

*The costs and benefits of job sharing also include those factors that are cited for permanent part-time employment but are not mentioned here.

COMPRESSED WORKWEEKS

Benefits to Company	Costs to Company	Benefits to Workers	Costs to Worker
Reduced absences	Supervision more difficult	Larger blocks of personal (i.e., nonwork) time	Child care on weekdays difficult
Lower turnover	Labor union opposition	Less commuting	Greater fatigue
Lower utilities and overhead costs	Labor law constraints		
Better use of production facilities			
Easier recruiting			

Costs and Benefits of Flexible Work Schedules

The accompanying table lists some of the major costs and benefits associated with various flexible work schedules (Nollen, 1982). Not all the costs and benefits listed for a specific schedule apply to all examples of that schedule and, even if a particular cost or benefit does apply in some situation, its magnitude may vary. The listing of costs and benefits does not, therefore, permit any definitive conclusion as to the overall positive or negative impact of a particular type of schedule on either the employer or the worker.

Many of the costs and benefits apply to more than one type of flexible schedule. Flexitime is notable for the paucity of costs to workers. Part-time work in general exhibits a more evenly balanced set of costs and benefits to workers. The special case of job sharing provides workers with significantly better wages and fringe benefits than does typical part-time work. In a sense, then, job sharing represents an attempt to divorce part-time employment from its traditionally low levels of status, pay and job security (Blyton, 1985). The compressed workweek, whose benefits to workers are not especially pronounced and may not exceed its costs to workers, encounters the most stringent opposition from labor unions and labor law.

A New Approach to Flexible Work Schedules

Flexible work schedules have tended to be conceived, introduced and evaluated one-at-a-time. Businesses, for example, that use the compressed workweek extensively are not likely to make heavy use of flexitime. Research studies have tended to focus on the effects of a particular alternative work schedule (e.g., the compressed workweek). An alternative conception would emphasize an array of flexible work schedules. A corporation might offer its employees a choice of schedule options (flexitime, part-time, compressed week, etc.). Various combinations of these options (e.g., compressed workweek with part-time) might also be entertained. Individually-tailored schedules could even be negotiated with the relevant supervisor or personnel office representative. The central idea here is that the new breed of worker has a variety of time-related needs (e.g., the need to mesh work and child care arrangements; to be at home until children leave for school; to attend to family sickness and emergencies; to provide elder care services; to leave work early for education and career retraining programs; to schedule exercise, fitness and health activities during an extended "lunch hour"). Workers therefore need to be able to select from a range of schedules or even tailor an idiosyncratic schedule. Once the notion of matching the worker with a schedule is accepted, the research question shifts somewhat from "What are the effects of flexitime across all workers?" to "What are the effects of flexitime on workers who have selected that schedule?" and even to "What are the effects of working on a schedule of one's choice when the alternatives include flexitime, part-time, etc.?" Work schedules can thus be administered using a "cafeteria" approach, one that is analogous to but not overlapping with cafeteria benefits. It bears emphasis that schedules and benefits should not be linked or traded-off against each other. As noted, benefits cost the company money; schedules, if properly managed, need not, and should be available to all employees without any related loss of benefits.

Flexitime

The remainder of this paper focuses on flexitime schedules. Flexitime is the prototypic flexible schedule. It is also the most prevalent full-time flexible schedule and is second in prevalence only to part-time work among all flexible work schedules. Furthermore, its prevalence in the workplace continues to increase steadily. Since space constraints preclude a detailed examination of each type of flexible schedule, flexitime has been selected for more intensive analysis.

The Components of Flexitime

Flexitime is really a whole class of flexible work schedules rather than a single schedule. All flexitime schedules allow the worker some variability of starting (and hence ending) time. The workday in flexitime consists of core time, during which all employees must be present, and flexible time, the portion of the day within which employees may choose their times of arrival and departure. Most statistics on the prevalence of flexitime refer to the basic requirement of flexitime, that is, the presence of limited control over starting and ending time.

These essentials aside, flexitime schedules can vary in a number of ways, each of which offers the possibility of additional flexibility that can be superimposed on the basic type of flexibility. In the first place, flexitime is more flexible when core time is short and flexible time is long. Flexibility is also enhanced if the employees can vary their schedules on a daily basis (i.e., a gliding schedule) rather than only with prior notice (i.e., flexitour). More flexibility results when employees can vary the length and timing of their lunch hour. Similarly, flexibility increases when employees can vary the length of their workday while still working a full workweek (i.e., more hours some days and fewer hours on others, with the option to carry-over or "bank" a limited number of hours). Even more flexible is the option to vary the length of the workweek while still working the same total number of hours (i.e., more hours some weeks and fewer hours on others, with the option to bank some hours). In principle, still further flexibility derives from the option to vary the total amount of time worked as well as the scheduling of that time. Some people, however, would question whether such control over the amount of time worked is consistent with current definitions of flexitime. Control over amount of work may represent too much flexibility to count as flexitime. In any event, actual flexitime schedules may offer various combinations of these optional features of flexitime in addition to the basic requirement of some limited control over starting time, or they may be confined to just the basic type of flexitime.

Flexitime schedules can also vary along another dimension of flexibility that cannot be defined in terms of hours or days. This is the dimension of supervisory discretion and approval. Some flexible schedules are totally up to the workers; others need the approval of the supervisor. There is reason to expect an inverse relationship between the level of flexibility permitted in the work schedule and the level of supervisory involvement required. Highly flexible schedules will typically require negotiations between employers and their supervisors so that worker preferences and business needs can both be accommodated. The more elementary components of flexible schedules, however, can be made available to workers on a routine basis. Schedules are obviously more flexible when they are not conditional upon the approval of individual supervisors.

Evaluative Research on Flexitime

An extensive body of research has evaluated the various effects of flexitime schedules. For a variety of reasons these research studies have not proven very definitive.

Design issues

At the outset, the studies have typically exhibited serious flaws of research design. Golembiewski and Proehl (1978), Tepas (1985) and others have cited the main weaknesses of the studies evaluating flexitime: (1) few studies use control or comparison groups; (2) few studies take a longitudinal perspective and evaluate the effects of the intervention after a satisfactory period of use; (3) most studies use only post-intervention measures, thus making it difficult to determine the existence and size of any changes from the pre-intervention phase; (4) studies tend to ignore possible effects of occupational differences; (5) the effects of organized labor are hard to determine because many of the interventions occur in nonunionized environments; (6) the validity of the criterion measures is unclear because they tend to be idiosyncratic measures rather than standard scales; (7) actual productivity data are frequently absent; and (8) adequate statistical methods and controls are rarely used.

Empirical findings

Findings from the evaluative studies of flexitime should be regarded as tentative because of the design weaknesses discussed. According to Ronen's (1984) review of evidence, flexitime tends to have positive consequences for both the organization and the individual. In more specific terms, Ronen (1984) examined the reported relationships between flexitime and various indicators of organizational effectiveness. He found that flexitime tends to be associated with improvements in or maintenance of (but not decrements in) productivity levels. About half of the organizations studied reported improvements in productivity under flexitime; half reported no change. Results were more equivocal for measures of work scheduling and work coverage. About equal numbers of firms reported changes for the better, no change, and changes for the worse. Flexitime appears to have little effect on, or to improve, relationships with groups outside the organization (e.g., suppliers and customers). Furthermore, Ronen (1984) noted that employees consistently associate flexitime with improvements or no change (but not decrements) in work climate. On the subject of costs, he concluded that flexitime can be associated with significant reductions in overtime expenditures. More generally, flexitime seems not to be associated with significant overall cost increases and it may actually produce savings for the organization. A more definitive conclusion, however, will have to wait until additional data are collected on the actual financial impact of flexitime.

Measures of organizational membership (absenteeism, tardiness and turnover) provided data favorable to flexitime. Ronen (1984) cited evidence that flexitime can reduce short-term leave and sick leave usage. The favorable results on flexitime and absenteeism suggest that flexitime alleviates the need to call in sick when employees need to attend to personal business. According to Ronen (1984), the impact of flexitime on tardiness is consistently positive, as long as organizations allow schedule discretion on a daily basis. The benefits of reduced tardiness, however, were not experienced by organizations that did not allow daily flexibility. Nollen and Martin's (1978) study found that turnover declined in just over half the cases of flexitime users. Ronen (1984) comments that flexitime can discourage withdrawal from an organization when employees perceive flexitime as an important benefit unobtainable elsewhere.

Ronen (1984) also reviewed studies of the relationship between flexitime and two types of job attitudes, overall job satisfaction and attitude toward the flexitime program. Changes in job satisfaction (and morale), he reports, are consistently positive. There is, however, one potential problem area. If certain employees are unable to participate in the flexitime program, their level of job satisfaction is likely to decline. All studies indicate overwhelming support among workers for the flexible schedules. Again, however, a qualification is in order. The attitudes of first-line supervisors are understandably less positive and more complicated. Supervisors may appreciate flexitime as it applies to their own jobs but are more ambivalent about the flexitime schedules of their subordinates. As supervisors, they may encounter problems in the work unit that are caused by flexitime. Flexitime, in short, calls for major adjustments on the part of first-line supervisors.

Ronen (1984) reported general improvements in life off the job (e.g., home life, leisure, recreation and education) in conjunction with flexitime. Yet a more intensive review of the impact of flexitime on family life does not reveal impressively positive findings. Studies of family impact do show some limited benefits of flexitime. Amount of time workers spends with other family members may increase; level of conflict between work and family life may decrease; nonetheless, the findings are neither consistent nor fully convincing (Bohen and Viveros-Long, 1981; Lee, 1981; Shinn, Wong, Simko & Ortiz-Torres, 1989; Winett and Neale, 1980; Winett, Neale & Williams, 1982). Since much of the push for flexible work schedules comes from workers with major family responsibilities (especially from working mothers), some investigators have found the findings on flexitime and family life disappointing. Looked at another way, the meager connection between flexitime and family life may demonstrate that minimal flexitime (i.e., slight variation in starting time, no daily discretion) fails to satisfy the needs of workers with major family responsibilities.

To summarize, the evidence on the impact of flexitime is far from definitive. It does tend to suggest that in many (but presumably not all) work situations both the organization and the individual worker can gain from this arrangement. Only in certain very specific areas (e.g., the attitudes and performance of first-line supervisors) is their major cause for concern.

Unresolved Issues Involving Flexitime

Flexitime and the other flexible work schedules have already made their presence felt in the workplace. Even though flexitime has cornered its share of the market and is gaining ground, it has a long way to go before becoming an option available to most workers. As noted, the driving forces behind flexible work schedules are the family and related needs of the contemporary American worker. If employers are to recruit and retain workers in a competitive fashion, they must respond to the felt needs of the working population. On the other hand, the push for flexibility encounters resistance from several sources. Some types of industrial work are not conducive to time flexibility. Supervisors and management harbor reservations about possible deleterious effects of flexible hours. Laws pertaining to working hours have constrained the viability of various flexible schedules. Unions have registered opposition to certain flexible arrangements.

Occupational constraints

Some types of work lend themselves less well than do others to flexible scheduling. According to Nollen (1982), flexitime is not well suited to manufacturing firms. Within such firms batch-process manufacturing holds better prospects for flexitime then do continuous-process work and assembly-line technology, which are least compatible with the varying start and stop times inherent in flexitime. When workers must operate as a team, the prospects for individual flexibility are at a minimum. Even under the most adverse technological conditions, however, some work arrangements (e.g., group flexitime, swapping among operators) can introduce elements of flexibility. Moreover, when buffer stocks can be built up between work stations, when advance production scheduling is possible, when employees work somewhat independently and when workers have the skills to perform multiple tasks, the introduction of flexitime into production environments becomes more feasible. Even if certain blue collar settings are not conducive to flexitime, some limited components of time flexibility can usually be incorporated.

The reluctance of supervisors

Supervisors, especially first-line supervisors, are a pivotal party in the introduction and implementation of any flexitime program. In many organizations, lower level supervisors are granted considerable discretion over whether flexitime is permitted at all, what types of flexibility are acceptable, and who is given the option of flexitime. As noted, however, supervisors are the group of employees likely to be least favorably disposed to flexitime. The job of the first-line supervisor becomes more complicated under flexitime (Ronen, 1981, 1984). Such supervisors may lose some of their authority and control as workers are given more autonomy. Additionally, supervisors may face more complicated scheduling and planning tasks. One study of flexitime (Graf, 1978) reported an increase in the amount of long- and short-term planning required of first-line supervisors and, likewise, an increase in the number of formal rules and regulations that supervisors generated to ensure smooth workflow in their absence. Furthermore, flexitime encourages a more participatory style of supervision, one that focuses on planning and coordination rather than monitoring. When the organization's climate or the supervisor's personality is authoritarian, flexitime will not be seen by the supervisor as a congenial innovation. In such circumstances it can require the supervisor to make a major adjustment.

For supervisory reluctance to be overcome, or at least minimized, supervisors need to be included in the process of planning and implementing the new flexitime system. They need to be trained so that they understand their new roles and responsibilities. They need to be provided with an appropriate organizational climate that encourages the participatory supervisory style that fits best with flexitime. Only then will supervisors realize that, notwithstanding the adjustments that flexitime requires of them, they can benefit from flexitime, as individual employees whose lives become more flexible and also as supervisors whose subordinates are exhibiting the lower rates of absenteeism, tardiness and turnover that are associated with flexible hours.

Legal constraints

Most of the potential legal constraints on flexible working hours derive from laws relating to maximum hours and overtime. Employers will be reluctant to agree to flexible schedules that exceed the maximum hours of regular compensation and incur premium overtime costs. As Ronen (1984) has observed, the various laws regarding hours of work have tended to institutionalize fixed scheduling by requiring the payment of wage premiums for work in excess of 40 hours in a week and, in certain cases, eight hours in a day.

The simplest form of flexitime (i.e., variable starting time without banking or debits of hours) encounters no problem with maximum hours legislation. That is, when employees work a fixed amount of time every day (e.g., eight hours) their flexitime schedules do not trigger any of the overtime premiums mandated by the laws about maximum hours. On the other hand, flexitime that allows banking of hours across the days of a single week but not across a longer time period is likely to trigger overtime premiums if the definition of overtime includes "more than eight hours in one day." In addition, if banking of hours can occur across a two-week period (or even longer), flexitime can also trigger overtime premiums if the definition of overtime includes "more than 40 hours in one week." Put another way, as flexitime schedules become more flexible, they become more likely to run afoul of maximum hours legislation and the various rules regarding premium pay.

The impact of legal constraints on those flexitime schedules that allow banking of hours thus depends on the specific circumstances (i.e., types of organizations, employees, etc.) to which the various definitions of overtime (e.g., more than eight hours in a day, or more than 40 hours a week) apply. Unfortunately, the range of applicability of the various definitions of overtime is highly complicated and involves federal, state and local laws, as well as collective bargaining agreements. Only federal law can be summarized succinctly. State and local laws concerning hours and overtime, like collective bargaining agreements, are highly variable.

In overall terms, federal law imposes the "not more than 40 hours a week" criterion of overtime on most workers and the "not more than eight hours in a day" criterion on a minority of workers. More specifically, the Fair Labor Standards Act (FLSA) imposes the "40 hours" criterion on most private sector employees (major exemption: many executive, administrative and professional employees) and most federal, state and local government employees. In general, the Walsh-Healy Act imposes the "40 hours" criterion upon employees who work on federal government contracts in excess of $10,000. The Contract Work-Hours and Safety Standards Act imposes both the "40 hours" and "eight hours" criteria upon employees engaged in federal construction projects. Title 5 of the U.S. Code imposes both the "40 hours" and "eight hours" criteria on most federal employees but Title 5 has been amended so that flexitime schedules and compressed workweeks can be introduced among federal employees without triggering overtime premiums when either of these overtime criteria is exceeded.

Several approaches may be adopted to minimize the legal constraints that maximum hours legislation impose on flexitime. In the first place, as noted, most simple flexitime programs (i.e., those without banking of hours) encounter no problems with maximum hours. By comparison, the compressed workweek frequently triggers overtime premiums unless special arrangements are made. Even when flexitime includes banking of hours within a single week, the infrequency of the "eight hours" criterion means that most workers need not be paid at premium rates. Only when banking of hours uses a contract (or settlement) period longer than one week (currently, an infrequent situation) do the problems of maximum hours legislation affect a majority of workers. Even so, banking of hours still need not trigger overtime premiums if the workday and workweek are shorter than the overtime standards. In other words, if the standard workday is less than eight hours (e.g., seven hours) and the standard workweek is less than 40 hours (e.g., 35 hours), some banking of hours would be possible without overtime premiums being triggered. In those situations in which flexitime does trigger premium pay, laws or collective bargaining agreements need to be changed to redefine overtime (e.g., as more than 80 hours per biweekly period) or exemptions need to be sought.

Laws and agreements about overtime are not the only source of legal constraints on flexitime. Collective bargaining agreements may specify working hours arrangements quite narrowly (e.g., all employees work 9 am - 5 pm, Monday to Friday). Clearly, such schedule agreements need to be revised in the collective bargaining process if flexitime is to be allowed.

Union resistance

Ronen (1981) has observed that unions have used the collective bargaining process in order to improve terms and conditions of employment. For the most part their efforts have been directed at protecting and maintaining the economic position of the worker. Specifically, they have sought (1) to maintain and increase the level of employment, and (2) to enhance the financial well-being of the individual worker. Three union policies have formed the basis for some union resistance to flexitime. In the first place, unions have bargained for a shorter workweek in order to expand the number of available jobs and to gain for workers as much leisure time as possible. Flexitime is viewed by some unions as a management compromise to a shorter workweek (i.e., a rearranged workweek gained at the expense of a permanent increase in hours). Moreover, such unions often view the compromise as offering illusory benefits for workers because they doubt that management will allow schedule choices to remain truly in the hands of workers.

Second, unions have strong views on the subject of overtime work. Unions fought for overtime premiums as a means to discourage excessively long work days and to augment the pool of available jobs. They also value the additional financial benefit workers receive when they do overtime work. Flexitime has been opposed by some unionists because they see it as decreasing the need for overtime. That is, under some circumstances, possibly engineered by management, workers could lose overtime premiums because their work no longer qualifies as overtime.

Third, some unions have opposed moonlighting because they desire to maintain employment levels. They have criticized flexitime in that it facilitates moonlighting by permitting workers to arrange their hours to accommodate a second job.

In short, as Ronen (1981) has pointed out, the concern of unions with economic issues such as the maintenance and creation of jobs through a shorter week, limited overtime and decreased moonlighting has detracted from their commitment to the quality of life issues raised by flexitime. A survey of American union representatives (Swart and Quackenbush, 1977) found mainly support for or neutrality towards minimal flexitime programs (no debit or credit of hours), more opposition than support for a more extensive flexitime program (debits and credits allowed), and very little support at all for the compressed workweek. Union support for flexible hours diminishes, that is, when loss of overtime rights becomes a salient possibility (i.e., highly flexible flexitime schedules or the compressed workweek).

In the light of the foregoing concerns that unionists have expressed about flexitime, a program to introduce flexitime will be more successful if it specifies clearly (1) how overtime will be defined, decided and measured under conditions of flexitime, (2) how paid time off for personal reasons (e.g., personal days, medical and dental appointments) will be preserved under flexitime and (3) how the flexibility inherent in flexitime will, as far as is reasonably possible, be at the discretion of the employee rather than the employer (or supervisor). Even when there is no union, management would be well advised to involve employees in planning the alternative schedule and thus allaying the fears that unions have more formally articulated.

Recommendations

New directions for research

Although flexitime and other flexible work schedules have been investigated frequently, the research has rarely been done well.

Specifically needed are the following types of research studies:

1. Studies with sound research designs (i.e., control groups, measures of long-term as well as short-term effects, pre- as well as post-intervention measures, controls on occupational differences, controls on whether the work environment is unionized, reliable and valid criterion measures that include direct productivity data, and proper statistical analytic methods).

2. Studies that test for plausible explanations of the effects of flexible schedules. Existing evaluative studies of flexitime have given insufficient attention to the key explanatory issue, namely, how does flexibility affect job attitudes or productivity or level of work-family conflict. If flexitime reduces work-family conflict by facilitating child care arrangements it becomes important to ask questions about child care arrangements (plus possible breakdowns in such arrangements) and then use statistical methods to establish the flexitime--child care--conflict explanatory sequence. Alternatively, if flexitime improves productivity by taking advantage of workers' naturally occurring periods of high energy and alertness, the flexitime-energy-productivity connection needs also to be established directly.

3. Studies that distinguish among the different types of flexitime. It is an oversimplification to inquire about what effects, if any, flexitime has on various criterion measures. As noted, flexitime

encompasses a range of schedule arrangements. At one extreme is some minimal variation in starting (and ending) time such that the worker adheres to the same schedule every day for an extended period. Alternatively, greater flexibility can be introduced by allowing (1) day-to-day variation in the starting time (2) greater amounts of variation in the starting time (3) variations in the timing and length of the lunch hour (4) variation in the amount of work done each day or even each week (i.e., banking of hours). Flexitime would be expected to have different consequences depending on how many of these various types of flexibility are permitted. Research studies, therefore, need to determine the effects of different levels of flexibility within flexitime. In other words, they might compare (a) a standard week, (b) flexitime (low flexibility), and (c) flexitime (high flexibility).

4. Studies that make systematic comparisons among various flexible work schedules (e.g., flexitime versus compressed week). Additionally, one could also include in a study various schedule combinations such as the compressed week with flexitime.

5. Studies of a cafeteria approach to flexible hours. Researchers should be interested in the effects of flexitime specifically among workers who have chosen that schedule, and also in the effects of being able to work on a chosen schedule when a variety of options (including flexitime) are available (e.g., Harrick, Vanek and Michlitsch, 1986).

6. Studies that provide a financially-based cost-benefit analysis of flexitime arrangements. More needs to be known about how much it costs to introduce, operate, or expand a flexitime program. Cost-benefit data will directly address the issue of whether flexitime programs are or can be profitable from an employer's standpoint. Put another way, cost-oriented research would indicate those occupations and industries for which particular types of flexitime programs make economic sense from a management perspective.

Public and private employers

Flexitime has made inroads in both the public and private sectors of the economy. Its potential contribution will not be fully realized, however, until the following steps are given serious consideration:

1. Introduction of flexitime where none exists. In conditions of employment less favorable to flexitime (e.g., production work, team-based operations, etc.) some limited flexible arrangements can often be introduced. Pilot programs are an excellent way to introduce flexitime when doubts exist about its viability.

2. Introduction of additional flexibility where some already exists. Minimal flexitime programs can frequently be expanded in the direction of greater variability in starting time, introduction of daily discretion, flexible lunch hours and banking of hours. Current flexitime programs in the U.S. tend to exhibit low levels of

flexibility, often leaving plenty of room for elaboration and enhancement.

3. Introduction of formal flexitime policies where only informal practices exist. Workers are better served when flexible work schedules are authorized on a formal organizational basis than when they are determined informally. As noted, however, highly flexible versions of flexitime will typically require consultation between employee and supervisor to arrive at mutually agreeable schedule arrangements. In other words, certain basic types of flexitime can be made automatically available to workers within an organization; more sophisticated types of flexitime may require a process of negotiation between workers and supervisors (or other representatives of management).

4. Introduction of a cafeteria approach to flexible work schedules. Employees could be allowed to choose among an array of work schedules and could even be able to choose a schedule customized to meet their individual needs. In most cases the process of customization will entail a process of negotiation between the individual worker and representatives of management.

5. Implementation of flexitime in ways that guard against the objections raised by unions. Flexible arrangements could, in principle, allow employers and supervisors to gain unintended control over workers' hours. The flexitime program needs to introduce clear formal agreements and procedures that prevent these unintended effects. Similarly,

because schedule flexibility could become a cheap substitute for various employee benefits, it will generally be advisable to isolate schedule choices from choices among benefits.

Labor unions

Unions have pointed to possible risks for workers that are inherent in various flexible work schedules (i.e., loss of overtime pay, increased management discretion regarding work scheduling, etc.). Unions need to realize that workers, especially certain nontraditional categories of workers, can also lose substantially by not having time flexibility. The solution is thus for unions to help formulate arrangements for implementing flexible schedules that preserve the advantages of flexibility while minimizing the costs and risks from the worker's standpoint.

Governmental action

In addition to acting as a model and innovative employer, governments at various levels can take other steps that will facilitate the spread of flexible work hours:

1. Funding of research studies and demonstration projects.

2. Disseminating the findings of evaluative research studies, information about the prevalence of different types of flexitime in the U.S. and abroad, and information about whether and how flexitime can be implemented under various conditions including difficult circumstances.

3. Revising legislative definitions of overtime to refer to the number of hours worked in a week (or even in a two-week period) and not to the number of hours worked in a day. The process of revising laws on overtime premiums requires that governments address the concerns of unions that flexible work schedules can permit adverse consequences for workers. Governments can help find common ground among employers, unions and individual workers on which to base the introduction of flexible work hours.

There is a further and broader course of action that governments can follow, namely, to help increase the time flexibility of institutions other than the workplace. Much of the demand for flexible work schedules derives from the temporal rigidity of other social institutions (e.g., schools and the child care industry) which, along with the workplace, impinge on the lives of citizens. If some of the need for flexible arrangements could be met outside the workplace, the problems and pressures of daily life scheduling would be considerably diminished. Governmental organizations could help take the lead in encouraging time flexibility across major social institutions.

REFERENCES

AMS. "1988 AMS Flexible Work Survey." *Management World* (July/August 1988).

Blyton, Paul. *Changes in Working Time: An International Review.* New York: St. Martin's Press, 1985.

Bohen, Halcyone H. and Anamaria Viveros-Long. *Balancing Jobs and Family Life: Do Flexible Work Schedules Help?* Philadelphia: Temple University Press, 1981.

Flaim, Paul O. "Work Schedules of Americans: An Overview of New Findings." *Monthly Labor Review* 109 (November 1986): 3-6.

Golembiewski, Robert T. and Carl W. Proehl, Jr. "A Survey of the Empirical Literature on Flexible Workhours: Character and Consequences of a Major Innovation." *Academy of Management Review* 3 (October 1978): 837-853.

Graf, L. A. "The Impact of Flextime on the First Line Supervisor's Job: A Preliminary Investigation." Paper presented at the 38th Annual Meeting of the Academy of Management. San Francisco, 1978.

Harrick, Edward J., Gene R. Vanek and Joseph F. Michlitsch. "Alternate Work Schedules, Productivity, Leave Usage, and Employee Attitudes: A Field Study." *Public Personnel Management* 15 (Summer 1986): 159-169.

Horvath, Francis W. "Work at Home: New Findings from the Current Population Survey." *Monthly Labor Review* 109 (November 1986): 31-35.

Lee, R. A. "The Effects of Flexitime on Family Life: Some Implications for Managers." *Personnel Review* 10 (Summer 1981): 31-35.

Mellor, Earl F. "Shift Work and Flexitime: How Prevalent are They?" *Monthly Labor Review* 109 (November 1986) 14-21.

Nardone, Thomas J. "Part-time Workers: Who are They?" *Monthly Labor Review* 109 (February 1986): 13-19.

Nollen, Stanley, D. *New Work Schedules in Practice: Managing Time in a Changing Society.* New York: Van Nostrand Reinhold, 1982.

Nollen, Stanley, D. and Virginia H. Martin. *Alternative Work Schedules, Parts I, II, III.* New York: AMACOM, 1978.

Ronen, Simcha. *Flexible Working Hours: An Innovation in the Quality of Work Life.* New York: McGraw-Hill, 1981.

Ronen, Simcha. *Alternative Work Schedules: Selecting, Implementing and Evaluating.* Homewood, IL: Dow Jones-Irwin, 1984.

Shinn, Marybeth, Nora W. Wong, Patricia A. Simko and Blanca Ortiz-Torres. "Promoting the Well-Being of Working Parents: Coping, Social Support, and Flexible Job Schedules." *American Journal of Community Psychology*, 17 (1989): 31-55.

Smith, Shirley J. "The Growing Diversity of Work Schedules." *Monthly Labor Review*, 109 (November 1986): 7-13.

Swart, J. Carroll and Robert A. Quackenbush. "Union's Views concerning Alternative Work Schedules and Proposals to Alter Federal Overtime Pay Legislation." Industrial Relations Research Association Annual Winter Meeting. New York, 1977.

Tepas, Donald I. "Flexitime, Compressed Workweeks and Other Alternative Work Schedules." In Simon Folkard and Timothy H. Monk (eds.), *Hours of Work: Temporal Factors in Work-Scheduling.* Chichester: Wiley, 1985.

Winett, Richard A. and Michael S. Neale. "Results of Experimental Study on Flextime and Family Life." *Monthly Labor Review* 103(November 1980), 29-32.

Winett, Richard A., Michael S. Neale and Kenneth R. Williams. "The Effects of Flexible Work Schedules on Urban Families With Young Children: Quasi-Experimental, Ecological Studies." *American Journal of Community Psychology* 10 (1982): 49-64.

31. MIXING CAREERS AND CHILD REARING

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conflicts between women's competing roles as mothers and as the source of needed human capital in our economy. The issues raised go to the heart of how, as a society, we address the needs of an increasingly diverse work force, maintain and enhance our productivity, and provide nurture and support to future generations of workers.

Children - and child rearing - are not, however, the only issue. Nor are they uniquely a woman's issue. The drastic reduction of the traditional support system (the wife at home) that used to permit the male breadwinner to devote himself entirely to his work has had many other impacts. For instance, there is less support for elderly parents or relatives as female caregivers join the labor market. Nor, in a less serious example, is there anyone left to let in the plumber when both spouses work. Fewer and fewer people are immune from the changes taking place as a once common sexual division of labor within the family gives way to a multitude of different roles for women and different family arrangements.

This paper will explore the issues of careers and child rearing; sorting out the origins and sources of the conflict; the barriers to combining them; and what can be done to lessen the burdens of the transition.

NATURE OF THE PROBLEM

The issue of combining careers and child rearing has come into public consciousness because so many more women with children now work. The magnitude of the change can best be understood by looking at how dramatically the world differs from what it was just over a generation

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INTRODUCTION

Over the past two decades, the separation of the worlds of family and work has begun to break down irrevocably. The separation of these two domains depended upon a traditional family structure with a division of labor between a male breadwinner and a wife at home. This family type, however, has become a distinct minority. Our labor force is coming from a much more diverse set of family arrangements where clearcut distinctions between participation in family and careers cannot be applied. We are in the midst of a major social transition. The new workforce is very different, but the terms of employment have barely begun to reflect this change.

Nowhere is this mismatch more severe than in the conflicts inherent in combining career and child rearing. It does not take a great deal of insight to realize the degree to which the demands of raising a family without a support system at home are incompatible with the traditional structure of a career. Yet there has been remarkably little effort to accommodate these conflicting life tasks. The reason for this lack of response has a great deal to with the fact that as a society, we have barely begun to align our values with the new social and demographic facts. We are still far from reconciling collective ago. As recently as 1960, just 38 percent of women over age sixteen worked. Now 55 percent of women work. (This is more than any other country outside of Scandinavia.) Seventy-five percent of them work full time. They will account for nearly two-thirds of the net additions to the labor force during the next 12 years and represent 47 percent of all workers by the year 2000 (Johnston, 1987). Even more profound is the increase in the percentage of mothers with children under the age of six who work: from 12 percent to 54 percent between 1950 and 1985.

A major consequence of these trends is that there are many more families where both parents work. In one-half of all married couple families and in 80 percent of married couple families with children under the age of 13, both spouses are in the labor force. In female-headed families with children under age 18, nearly 70 percent of the women are in the labor force (BLS, 1989). The net result of all this is that most parents are working and make up some 37 percent of the total U.S. labor force. And the vast majority of them have no support system at home to care for the children while they work. In a very real sense, the issue of combining family and career is not just a concern for women.

Not only are women increasing their share of the labor force, they are far more represented in many occupations that used to be nearly all male. Between 1970 and 1983, for instance, women's share of technician jobs went from 34 to 48 percent, of lawyers from 5 to 15 percent, of natural scientists from 13 to 20 percent, and of accountants and auditors from 25 to 39 percent. As of February, 1986, women constituted the majority of professional employees in the U.S. economy (Bloom, 1987).

Women are now the majority of college graduates. In the past 15 years, their proportions of the graduating classes of many fields has greatly increased. In 1983, they received 45 percent of accounting degrees, 36 percent of law degrees, 36 percent of computer science degrees, and 42 percent of business degrees (Johnston, 1987). Even in traditionally underrepresented areas like engineering, the percentage of women receiving masters degrees went from 1.7 percent in 1973 to 9.3 percent in 1983 (Trost, 1986).

In a very real sense, women are indispensable to the economy. They are nearly half of the labor force. They are educated. And they are a vital source of the human capital needed in the years to come.

In spite of the great economic opportunity that women's entry into the labor force in large numbers promised, there is considerable evidence that, for most women, the gains have fallen short of expectations. As Victor Fuchs has noted, by one measure, (effective income per hour of work), women have made gains but have still lost ground compared to men over the period 1960 to 1986 "because of the increased burden of work on women who took paid jobs but still had substantial responsibilities at home." The only women who experienced a large increase in well-being relative to men were young, white, well-educated, and unmarried (Fuchs, 1988). For them, of course, there is no conflict between career and child rearing - at least as long as they remain childless. For most other women, however, the ledger is decidedly less positive and the outward signs of frustration are growing.

One symptom of this frustration is a whole body of popular literature that has developed over the past decade or that is dramatically revising the optimistic picture of women's expectations. (see, for instance, Morrison et al, 1987; Collins et al, 1988). From "you've come a long way baby" and the nonsense of the "Aviance Women," many observers are documenting the growing sense of disillusionment. There is a palpable sense that the middle class American Dream needs revision. Yet there is really no new vision to replace the "Leave it to Beaver" family of the 1950s or the woman who can "have it all" vision of more recent times.

The frustration being voiced may, in part, be due to unrealistic expectations. In retrospect, the promises of equality and opportunity that rang so clear during the past two decades were overstated. For instance, after a spurt of progress during the 80's, the ratio of female to male earnings has stabilized around 65 percent. In spite of visible changes, many of the patterns of occupational segregation have persisted. Key indicators of occupational segregation reveal "considerable persistence in segregation by sex" between 1960 and 1980. And these are in sharp contrast to trends in segregation by race. Younger and better educated women did achieve some gains but even for these groups, "segregation by sex is substantially larger than segregation by race" (Fuchs, 1988).

In 1985, women were over 33 percent of all executive, administrative, and managerial positions as opposed to 22 percent ten years earlier (Franklin, 1985). But these women were disproportionately concentrated in the low to middle management positions. A Time survey in 1982 reported that women were only 5 percent of the executive positions in the 50 largest companies. And a Korn/Ferry study indicated that women held only 2 percent of top executive positions (Korn/Ferry International, 1986). It can be argued that this shortage of women at the top is only a matter of a time lag as the swelling ranks of women in the mid-level positions move up. Many observers, however, feel that this is not a situation that time alone will change.

Other evidence that women are experiencing serious difficulties in the traditional labor force is that the number of small business start-ups has doubled in the past ten years and women are accounting for a greatly increasing share of them. In 1976, women owned 5 percent of all small businesses. In 1985, women owned 25 percent of small businesses and the Small Business Administration estimates that half of all businesses will be women-owned by the year 2000 (Franklin, 1985). The same trend is true for self-employment. There were 2.8 million women who were self-employed in 1985, up 43 percent from a decade prior. In the same period, the number of self-employed men rose by only 9.8 percent. This trend is not necessarily bad for the economy overall but is clearly evidence of the failure of larger institutions to assimilate many highly qualified and ambitious women.

Another clear sign of the failure to accommodate female participation is provided by studies that indicate that even well-educated women in promising careers are more likely to drop out than men. A Fortune magazine survey, for example, showed that women

MBAs from top business schools had left the management track in large corporations at a rate 50 percent higher than their male colleagues (Taylor, 1986). A study at a major international company recently documented that of potentially high performing employees, women had dropped out at two and one half times the rate of men (Schwartz, 1989).

And this is not just a phenomenon that affects only upper middle class women. The types of problems that women are facing are a function of their family situation, their educational level, income class, and career aspirations. For the welfare mother, a failure of the work place to accommodate the demands of caring for young children can mean the difference between escape from poverty and the status quo. For the woman attempting to secure the relatively high pay of the factory assembly line the practices surrounding shift work present serious barriers to overcome. For example, a common policy of requiring entering employees to work second or even third shift may mean that she will virtually never see her school age children during the work week even if she is able to arrange for child care. And all working parents who seek to combine a successful career or job history with parenthood without the benefit of a wife or full time caregiver at home find themselves strained to the limit attempting to perform two full-time jobs while many colleagues/competitors at work have only one.

While we cannot know for certain that all of the above indicators are primarily women's responses to frustrations in attempting to combine careers and child rearing, they are at the very least consistent with the other data that show the tremendous stresses women with children are under. And when combined with the data on the difficulties that women with children are having at work, they provide compelling evidence of the nature and scope of the problem and the need for business and government to take steps to address it.

BARRIERS TO MIXING CAREER AND CHILD REARING

The central problem is that our thinking about careers is shaped by outdated assumptions regarding who is having them. First of all, let us choose a simple and straightforward definition of a career as "the evolving sequence of a person's work experiences over time" (Arthur, 1984). Often without thinking about it, we tend to make a number of specific assumptions about how these experiences will happen. We often assume, for instance, that career paths will be linear, with unbroken progress toward ever more responsible and demanding jobs. We assume that people will devote themselves to the job as if the job were all that mattered. And we assume that this upward pattern will be convenient and attractive to people at all points in their lives (Bailyn, 1984). In some ways, our assumptions are so ingrained about what careers are all about that they are never subject to question.

For the women with children, for the dual earner couple, indeed for anyone with caregiver responsibilities, the traditional model does not fit well. Workers are no longer homogeneous. Most have some sort of significant, time consuming, family responsibilities for at least part of their lives. The inflexibility assumed in a system where, as Kanter describes, people work "as if" there were nothing else that mattered, puts onerous burdens on people who cannot make total commitments to the job at all times (Kanter, 1976). The traditional assumptions about career don't work without the traditional wife.

Consider the intersection of the stages of a traditional career with the traditional family life cycle (Voydanoff, 1987):

Family Cycle	Work Cycle
Establishment	Novitiate in career
New Parents	Early Career
School-Age Family	Middle Career
Post-Parental Family	Late Career
Aging Family	Post Exit

The staging of these two cycles poses quite a problem without the traditional division of labor between husband and wife. Commitment to career is assumed to be highest at a time when family responsibilities are most demanding. During this time, working parents are logging in hours equivalent to two full-time jobs while trying to compete with those without significant dependent care responsibilities who can devote themselves fully to one job (see below for full discussion of hours). For a single parent or a dual earner couple, coping with this situation often causes serious overload and stress. Since men rarely share equally in home chores and child rearing, the burdens on a working mother trying to combine traditional schemes of career and family are often overwhelming.

One way that parents, and women in particular, have previously attempted to reconcile these work and family cycle issues is to sequence the stages, with the woman dropping out of the labor force in order to have children. When the most demanding period of child rearing was complete -- say when the last child entered school -- the woman would return to work and attempt to re-establish her career. Sequencing was the way the few women who did successfully combine parenting and high achievement in another era did it. Extraordinary women like Carla Hills and Jeanne Kirkpatrick followed a sequencing pattern. The problem with this solution is that for the vast majority of women, leaving the workplace for a period of time usually has grave career consequences. It violates the very norms that we have used to define the pattern of a traditional career. Whether it involves a woman leaving the "fast track", or losing seniority, or just letting skills degrade, the consequence is lower earning potential and being seen as one who is not "committed" to the job. Moreover, it is no longer economically feasible for a family to forego the income of one adult member for an extended period of time. It is well understood that most women work out of economic necessity.

Standard business practice

One observer has commented that the modern corporation has been built to the specifications of Ozzie and Harriet (Levitan, 1988). Many of their practices impede the full participation of anyone with significant responsibility for children. These include rigidities in hours and location of work; demands regarding overtime, travel, and relocation; and the lack of supportiveness for family issues as reflected in the behavior of supervisors and more generally in the culture of a company.

One of the very obvious practices that unnecessarily limits the contribution of women with children is the unquestioned adherence to the 40 hour work week. While there are doubtless jobs where this is a rational unit of measure, the loyalty seems generally unfounded. For example, businesses who have worried about the negative reaction of customers to less than "full-time" people have often learned that customers are far more concerned about high turnover among their account representatives than about not being able to reach a representative at all times during the day.

This adherence to the 40 hour model not only militates against the creation of meaningful part-time opportunities, it creates a climate where incumbents of part-time jobs are viewed as having less short- and long-term commitment to the company. Because of this, one innovative employer, NCNB Corporation has even changed the term "part-time" to "select time" to overcome the negative connotations of the term.

Many companies have instituted flextime in order to respond to the need for greater flexibility in scheduling. One recent study indicated that about one in eight full-time workers is on some type of flexible schedule (Mellor, 1986). However, while employees of all types value flextime, there is some evidence that it does not provide much benefit to working parents, especially when applied in a rather limited form (see, for instance, Bohen and Viveros-Long, 1981). The needs for flexibility go far beyond changes in the starting and ending times of a 40 hour week. They include the need to adjust hours and even location of work on a fairly routine basis for such mundane but essential purposes as attending to chicken pox, taking time off to attend the championship soccer game, the trip to the child's dentist, and extend to the need to modulate the degree of work involvement overall, according to the needs of the phase of family life cycle.

While individuals are afforded very little personal flexibility, there are many jobs, on the other hand, that demand a great deal of flexibility on the part of the individual. These demands include required overtime, attendance at breakfast, evening or weekend meetings, travel, and relocation. While some of these demands (such as travel and relocation) affect primarily professional employees, lack of control over hours of work and the lack of ability to make up time or not be penalized for absenteeism due to sick children is even more of an issue for lower level employees. Employers often assume this type of flexibility and employees who are unable to provide it are labeled as deficient or lacking in commitment.

The problem of expecting the employee to provide all the flexibility is a serious one for both employers and employees. At one large petrochemical company, for instance, an internal study revealed a relocation refusal rate of 26 percent with major factors being the career of the spouse and concerns for children's education. Other sources pegged the refusal rate nationally at 24 percent (Winfield, 1988). Our studies show avoidance of jobs with shift work and overtime to be a significant factor for non-exempt employees. Clearly, relocation and overtime are unavoidable aspects of some jobs. But to fully use our labor force, we will have to find other ways of broadening experience and defining jobs. Moreover, the inability to be flexible at one stage of life does not necessarily have to be a litmus test of employees' long-term career commitment if family obligations are only temporarily at odds with these needs. In fact, in a study conducted by the authors at a large financial institution, there were no long-term ambition differences between parents and non-parents (Rodgers & Associates, 1986).

In all the companies where we have collected information on the trade-offs between work and family issues, one of the most fundamental concerns voiced by employees with children was the tendency to be judged on effort instead of contribution. Especially in the service sector, where women are well represented, the output of many jobs is difficult to assess objectively. As a result, employees report that supervisors tend to rely on perceptions of the amount of time that people are working instead of the output produced. For the employee with significant family time commitments who places very high value on being productive during the available hours, this often feels like outright discrimination. Just being present for long hours often becomes a proxy for both contribution and for commitment and loyalty to the company.

A final barrier to working parents is the type of climate within the company with respect to work and family issues. There is some evidence that one of the most important predictors of stress is the degree of support a parent receives from his or her supervisor (Galinsky, 1988). This in turn usually reflects the spoken or unspoken policy of the company regarding supportiveness for employees' family needs. A company that is not explicit in its willingness to accept the legitimacy of family issues in the work place will inevitably bias the overall culture to be unsupportive toward working parents.

What the preceding issues make clear is that businesses that operate within the framework of the traditional career path will impose severe hardships on their employees with children and may actually make them less productive and more costly. There is increasingly no such thing as a career contract that is valid throughout an employee's work life. The terms of engagement have to be continually re-negotiated as life circumstances dictate (Bailyn, 1988). An employee may be entirely able to make the traditional type of commitment for certain periods and then scale back temporarily to manage the care of children or aging parents. If any deviation from the traditional norms of the contract is viewed as a lack of loyalty or lessening of commitment, both the employer and the employee will lose.

Barriers to entry

One major barrier to workers with children has little to do with the expectations inherent in the traditional career model. This barrier is the child care support system that allows parents to work in the first place. Child care is frequently difficult to find. Once found, it often is in an inconvenient location, can have hours and vacation policies that do not conform to the work schedule, and frequently fails to meet parents' expectations for quality and cost. It can also be unreliable, especially when one considers that the child care industry experiences turnover in excess of 40 percent per year. And for odd-hour schedules, it can be virtually non-existent.

Locating care for a child is a major problem. There has been a great deal of discussion on whether or not there is a shortage of care (Connelly, 1988; NCJW, 1988). What does seem certain is that there is not enough care that satisfies parents' quality standards and is affordable. A 1987 study based on a Special Census Survey showed that 13 percent more mothers with children under 6 would work if affordable care were available (O'Connell and Bloom, 1987) and a National Conference of Jewish Women Center for the Child study indicated that, of women who decided not to return to work for their prenatal employer, 20 percent said that not being able to make "satisfactory child care arrangements" was a deciding factor (NCJW, 1988). A Bureau of Labor Statistics study showed that the lack of affordable child care was a major barrier to women returning to the labor market after childbirth (Bloom, 1984). These data suggest that policies to attract women with young children (one of the only demographic groups that has significant potential to increase its participation) could attract large numbers of new workers.[1]

If the data on supply and demand are ambiguous, the testimony of parents seeking care is not. In survey after survey, large percentages of parents indicate that the search for care is very difficult. In a 1987 Fortune magazine survey, 20 percent of parents found locating child care "difficult" or "very difficult." For those with infants, 33 percent had difficulty (Galinsky and Hughes, 1987). In another survey of working parents, nearly 50 percent of mothers with new babies indicated "very serious" (29%) or "serious" (19%) problems in arranging care (NCJW, 1988). Our own surveys of employees in large corporations show consistent results, with from 20 to 40 percent of respondents indicating substantial difficulty (Rodgers & Associates, 1983, 1986, 1988).

What is not always well understood is that the problem in arranging care is not just a matter of lack of supply or of cost. There is also a serious problem in finding what care does exist. Day care centers apart, there are virtually no centralized and well-publicized listings of providers. A large proportion of child care is provided by family day care homes. Even if they are registered with state licensing authorities, there is no easy way to get their names and addresses. Moreover, even if the parent knew whom to contact, the search for actual vacancies is a time consuming and frustrating task.

Problems in finding care do not stop with the initial arrangement. Family day care homes, the major source of care, are notoriously prone to turnover. It is estimated that as many as 60 percent of family day care providers turn over every year. Staff turnover in centers is estimated to run at about 40 percent (Galinsky, 1988). Turnover for caregivers in the child's own home is probably even higher. Because of this, care arrangements break down with relative frequency for many parents. In the Fortune survey cited above, nearly half of the parent sample reported missing work at least one day in the three prior months. Of these, half were for family-related reasons. Either the child was ill and could not be placed in care or the care itself broke down. Numerous other studies have documented the high degree of correlation between problems in child care and stress, absenteeism, and lower productivity on the job (see, for instance, Fernandez, 1986 and Galinsky, 1988). Given the highly patchwork system of child care in this country, these problems are routine and costly for both employers and parents.[2]

Hours of work

One of the most difficult aspects of combining career and child rearing is the sheer number of hours involved. Common sense tells us that people who are responsible for child care and home chores in addition to a job will have time for little else. And since working women are usually heavily involved in both household tasks and child care, it should not be surprising that they bear far heavier burdens than those carried by single and childless people.

What information is available on this subject tends to corroborate the commonsense notion. Fuchs has compared men and women between the ages of 25 and 64 over the period 1960 to 1986. During that time, the average annual hours of paid work (all women included) increased dramatically, from 572 to 997 hours. For men, the average number of work hours fell slightly, due in large part to declining labor force participation (from 87 to 80 percent). Time spent on unpaid housework and child care declined for both groups, in part because of more childlessness and smaller family size. (Of course, women spent more hours in both of these categories than men at both points in time.)

The net effect was that women increased their total paid and unpaid hours by seven percent while men decreased theirs by the same percent. "As a result, by 1986 women were putting in more hours of work than men, whereas in 1960 the reverse was true" (Fuchs, 1988). And the biggest differential was for married women.[3]

A study conducted at two large companies with over 10,000 employees in 1986 provides additional evidence of the burdens on women with children (Burden and Googins, 1986). In this study, the number of hours were tabulated by the same three categories: job, child care, and home chores. The differences among parents and non-parents were pronounced. Married women with children worked an average of 84 hours a week, compared to single or married childless individuals, none of whom worked in excess of 56 hours. Single women with children worked an average of 79 hours per week. And married male parents worked in excess of 72 hours per week.

The results say volumes about the difficulties of combining work and child care responsibilities. The average married woman with children worked the equivalent of more than two full-time jobs. Married male parents were not far behind. The differential in hours worked clearly creates an unequal playing field. Parents, especially women, are at a substantial disadvantage vis-a-vis all others who work, to the tune of 20 to 30 hours per week. Such a differential cannot help but show up in performance on the job and in frustration for the individual attempting to juggle two roles.

There were also explicit tradeoffs with jobs. "Married female parents and single female parents reported two to three times the rate of absenteeism as single male parents and married male parents." In fact, the study noted that the women in two earner families with children may be playing an important role in making it possible for their male spouses to work, since male parents had the lowest rate of absenteeism.

Women bear the burden. Fifty-seven percent of the female married parents in the above study reported full responsibility for home chores and child care versus only six percent of married males. There are some indications that the distribution of work and the accompanying stress may be shifting, however. A recent study of how men and women allocate time to home chores turned up some changes in the past several years (Robinson, 1988). After a long period of stability in the unequal distribution of home chores, a shift to a more equal distribution was detected between 1975 and 1985. In that period, the time that men spent on home chores went from 7 to 10 hours while for women it declined from 22 to 19 hours. While this hardly constitutes equal sharing, the trend may be moving toward a smaller differential.

The evidence that exists seems to be fairly consistent. With respect to time, women with children operate under a substantially more onerous set of constraints than men. They are still shouldering many of the burdens of the division of labor in the traditional family. Without specific accommodations, the burden of performing multiple roles may be impossible for many women. Yet in neither the home nor the workplace has much accommodation taken place.

IMPACTS ON MEN

The focus on the subject of mixing career and child rearing has appropriately been on women. The combination of the two is still at this point in time far more difficult for them than for men. And they carry the added baggage of cultural factors that male parents do not have to face. Nonetheless, there are signs that combining the roles is becoming a problem of parents, regardless of their sex. Most studies still compare the experiences of all men to all women. However, when younger men and women are looked at separately the differences between the sexes appears to be narrowing. This is particularly true in the growing number of families where the income between spouses is similar.

Men have become enmeshed in the problem mostly because they are married to women who work. (There is an increasing number of male-headed families with children, but the absolute numbers remain small.) In many of the studies where both male and female employees are polled on the conflicts and difficulties of combining careers and family concerns, men indicate that they are under increasing stress. In the study mentioned above (Burden and Googins), there were almost as many fathers as mothers (36 versus 37 percent) who said they experienced a lot of stress in balancing their work and family lives. In the Fortune magazine study (Galinsky and Hughes, 1986), for example, only slightly fewer men than women -- 37 versus 41 percent -- said that the job interfered with family life. Slightly more men than women said that they refused a job, promotion, or transfer because it would mean less family time.

In our own studies of large employers, men indicate that they, too, are beginning to experience serious difficulties. In a large survey undertaken for Dupont de Nemours & Co. in 1985, employees were asked to indicate what degree of difficulty they experienced in locating child care for overtime, sick child care, and in planning vacations around family schedules. At that time, more than twice as many of the women said that they had a great deal of difficulty, compared to the men. Three years later, in a similar survey that repeated these questions, the percentages had changed dramatically. The percentage of women reporting great difficulty had changed only slightly or slightly declined, while the men had either approached the women on the measured items or caught up to them (Rodgers & Associates, 1988).

At this point in the transition, it seems that men are experiencing the tradeoffs of combining career and child rearing at an increasing rate but still significantly less than their spouses. The conventional wisdom is that men do not feel as committed to the care and nurture of children as women. Changes in men's roles have been slow. Even in a country like Sweden, where equality of the sexes is an actively supported public policy and there are far more family supports open to both men and women, the changes have been slow (Haas, 1988).

Attitudes toward family and child rearing and the predominant role of women in these activities are deeply ingrained and will not be modified overnight. But men's participation in the child rearing is growing and this trend is likely to continue. Men are already showing the effect of being members of two career families. They are refusing to relocate because of family responsibility. They are beginning to resist jobs requiring a great deal of travel. And as more women attain earning equality with men (in dual career couples, 17 percent of the women have greater earnings than their spouses) the sharing of the tradeoffs will likely increase.

IMPACTS ON BUSINESS AND SOCIETY

On business

Businesses need skilled human capital to survive and thrive in today's competitive global economy. The consequences for business of failing to accommodate the increasing numbers of women are a reduced pool of talent to draw from, more turnover, and lost productivity. There are high costs to business of recruiting valuable talent, training it, and replacing it if it leaves. There are benefits foregone when skilled human capital does not perform up to its full capacity. With the supply of younger workers decreasing, recruitment costs are becoming more important. As the skills needed in today's economy become more complex, the cost of losing a trained employee becomes higher. And as the need for a highly productive and committed workforce becomes essential to our competitiveness, a work environment that decreases the likelihood of motivated and committed employees becomes a dead weight on growth and productivity.

Women are an increasingly large portion of our stock of skilled human capital, especially of those with college education. Since over 70 percent of all women in the labor force are in their childbearing years, obstacles that reduce businesses' access to or ability to utilize this resource become serious competitive issues. If women cannot participate to their fullest capacity, the marketplace is deprived of some of its most productive factors. This applies to women who would work but cannot do so because of their child care problems, as well as women who are in the labor force but whose productivity is constrained by inflexible practices and insensitive managements.

On society

The consequences we've been discussing are well understood in relation to individuals and businesses. When we start to consider the impact of these changes on society as a whole, the patterns of effects are harder to pin down although they are profound. One question in particular seems especially troublesome: how, if at all, do the problems surrounding combining career and children affect the general welfare of children in our society, our future labor force, and people's propensity to have children at all?

The fertility trends are well known, if not easily predicted more than a few years into the future. Fertility is in a long term downward cycle in nearly all developed countries. Recent trends in the U.S. have been fairly dramatic. In 1960, there were 118 births per thousand women of childbearing age. In 1986, there were only 65 births, well below the replacement rate of 70. In the same period, the percent of women aged 25 to 39 with no children in their household went from 18 to 28 percent and the percent of women between 25 and 44 who were not married went from 17 to 31 (Fuchs, 1988). Some analysts project that the proportion of childless women now in their late twenties who will never have children will probably exceed 25 percent, compared to the 5 to 10 percent rate that had been the pattern (Bloom, 1986).

What is particularly noteworthy is the number of college educated women who say they do not intend to have children: nearly 20 percent (Bloom, 1984). Given the demands of careers and the costs of children to career, many women and men appear to be making an explicit choice between career and child rearing. Childlessness is also on the rise because of increased infertility brought about in part by delayed childbearing--also potentially a career-related choice. A direct cause and effect relationship has not, and probably cannot be determined. However, studies of successful women show that women who are high corporate achievers are less likely to be married or have children than are men in comparable jobs. In one 1985 study of executive men and women, 97 percent of male executives were married, while only 54 percent of female executives were (Sutton and Moore, 1988). A similar study looking only at senior female executives found that 65 percent of those under forty did not have any children and 61 percent were married (Heidrick and Struggles, 1986). This is in sharp contrast to men in similar positions, virtually all of whom are fathers. This statistic sends a clear message to younger women about the tradeoffs that must be made to achieve success at work.

If these fertility patterns persist across population groups, we will be guaranteed future labor shortages. If people with education forego children, moreover, the public may end up having to invest more heavily to ensure that children from less educated families with fewer resources have the skills needed for the future economy. It is also worth pondering whether there would be any negative effect of having more and more childless people as leaders of our largest institutions. While there are many ways for people to stay in touch with youth and "the future" (presumably desirable in a leader), having children is the one we have relied heavily on in the past.[4]

POLICY IMPLICATIONS

If our goal is to reconcile better the demands of parenting and careers three major things must happen:

- There must be far more support for dependent care so that more parents can work, so that the care that exists more closely matches the conditions and location of work, and so that the next generation of workers gets a proper start in life;

- The workplace must offer employees much more control over hours and location of work, more alternative career paths, and an ability to be judged by contribution, not just hours worked;
- Managers and supervisors must be more sensitive and supportive to employees with family responsibilities. In order for this to happen company leaders must acknowledge the importance of accommodating the family as a business necessity.

The findings of this paper point out the need to make basic changes in the culture of the workplace that is still operating as though we all live in families with wives at home serving as our support system. The kind of changes that are needed must and will happen on a micro level. No one can legislate cultural change nor will it come about unless businesses, one by one, come to appreciate the compelling business case for change. For most of the last twenty years, business has had the luxury of adjusting to the changes in the American family with a surplus labor pool to cushion the effects. This labor pool is growing far more slowly now and the changing demographics will now accelerate the rate of change. And a more articulate and empowered younger work force will demand change.

In our view, it is appropriate for government to play a significant role in bringing about the changes listed above. It can play a major role in addressing the needs for dependent care and can itself serve as a model employer in accommodating the needs of parents who work.

What government will be able to do in the short run, however, is limited by three factors. First, there is a perceived lack of public consensus on the proper role for government in this matter. (We used "perceived" because there is evidence that the public sees spending money on matters like child care to be a priority.) Second, even if the federal government were to arrive at a definition of its role, budget constraints severely limit what it could accomplish. Last, the nature of the problem means that major solutions must be in the hands of employers who will have to decide the extent to which they will modify or change their policies and procedures to meet the needs of a more diverse work force. In this latter arena, we have historically allowed government a very limited role.

Before we can even begin to address the public policy options, however, we need to question whether we can even approach a consensus on what the objectives of public policy should be. Should we as a nation expressly support the notion of parent working and recognize in some official sense our economy's dependence on them? If so, can we support working families without devaluing the minority of families that still sacrifice income for a mother to stay home with children? Moreover, should we embrace the view that what happens to children during the early years of life is not purely a private concern of parents but has implications for the future of us all?

The current administration is committed to child care policies that spread scarce resources between low income parents who work and those who don't. If the purpose of a new child care policy is to support individual families with children regardless of their choices to work, this proposal makes sense. However, if the purpose of the policy is also to support the needs of the economy and the labor force, it probably does not. The competing child care proposals now being considered by Congress reflect the highly charged and value-laden atmosphere in which we now find ourselves. In the current environment it is not easy to see how public policy with clear objectives to support the labor force participation of working families can emerge.

Policy alternatives: dependent care

The public policy arena that has been most extensively discussed to date has been the role for government in the nation's child care system. The major policy options outlined have been: 1) Federal assistance through tax credits to low income families regardless of whether both parents work. 2) Various approaches to shore up the child care infrastructure including in some cases promulgating minimum federal standards. 3) The provision of funding to pay for part of the child care costs of low income and lower middle class families who have all adults employed in the home. 4) Tax credit incentives to encourage businesses to provide child care to their own employees.[5]

Ironically, most government exhortations to business in the work and family arena have focused on child care, the one work and family area where no business can really address the full range of need of its workforce without a government partnership. Most analysts believe that the major deterrent (beyond cost) to more employer involvement in dependent care is that the child care marketplace itself is so disorganized and confusing that it is difficult for employers to "buy into" it. Efforts at all levels of government to encourage employers to do more in the child care area through the provision of various tax credits have not worked and are unlikely to yield many results in the future.

It is difficult, under these circumstances, to imagine government policies that are effective without addressing the problem of basic infrastructure. At the State level, this means fixing cumbersome and inadequate regulatory systems. It also can mean taking action on such matters as removing antiquated zoning barriers that keep child care out of residential areas where it is needed most. At the federal level, this means providing some funding to community-based organizations whose job it is to coordinate child care resources, do planning, help parents find and select care, and assist providers to offer what parents need. These basic market clearinghouse functions are missing in the current child care structure. (These type organizations are usually referred to as resource and referral agencies.)

There also does not seem to be any alternative to government at some level helping with the affordability of care for those who cannot work without it. Increasingly, this means families who may be considered at the low end of middle income will need support through expanded income tax credits or direct subsidies. As child care costs rise with the inflationary pressures brought about by a shortage of child care workers, the cost of care versus the economic benefits of working will tip against working without more public support. Capping this support to families with gross incomes of $20,000 (as now envisioned in the Administration proposal) will not be sufficient.

Were the government to fulfill the above functions in some way, businesses could then help create supply specifically geared to workplace circumstances and could eventually help pay for some of the costs of those already employed for whom continued employment is a business priority. Business could do much more if a baseline community structure were a public responsibility. For example, in the field of services to the elderly, this baseline has existed since the 1960s with the passage of the Older Americans Act. This has created community-based organizations all over the country with the responsibility for coordinating services, keeping basic data and attracting public and private sources of supply. While this system has many flaws, it makes elderly services a more organized and rational marketplace in which to make decisions.

Flexibility and management sensitivity

In the area of making workplaces more flexible and sensitive to families, the potential for government action is more limited. The possible options are:

- Government as a major employer can lead by example;
- Government can assume a role of educator and facilitator encouraging and disseminating examples of flexibility and work-family sensitivity;
- Public policy could mandate the availability of part-time work and flexible hours directly or through increased scrutiny and sophistication in the Equal Employment Opportunity Process;
- Government can remove any existing barriers to flexibility that were once thought to be necessary to prevent the exploitation of workers (i.e. work at home, limitations on hours worked per day) but may actually now be an impediment to the needs of families;
- There may be areas of the law where equity considerations prevent differential treatment for family-related reasons which can be redressed by legislation.

For the purposes of education and encouragement the government can lead by example. As a major employer it can support dependent care needs, create flexibility of all types, and train and hold accountable its management for daily work practices that are sensitive to employees family needs. It can publicize its own efforts, identify and publicize the efforts of employers who make real flexibility breakthroughs, and produce materials and hold conferences and meetings that educate others to the benefits of these practices. It can also fund evaluation and research efforts that explore new approaches to work organization.

Mandated part-time work and greater flexibility of hours would certainly help to make these options more widely available. However, the type of changes this paper addresses are far-reaching and affect a company's very culture and must be worked out by individual companies. To be effective, they would have to be implemented voluntarily. In our view this means that even if mandates were politically feasible, they would probably be ineffective and unenforceable through an EEO audit or any other known means. How, for instance, would one measure day-to-day management sensitivity or detect long-term career effects of parenting with existing government enforcement methods?

Another option is for government to try to assure that as a regulator, its actions do not unnecessarily impede initiatives of private employers that aim at greater work place flexibility if the purpose of that flexibility is clearly to afford more support to families. This is very different from the intent behind efforts to increase part-time work in order to reduce an overall benefits package or increase the size of a supplemental or buffer labor force at the expense of a permanent one. In the interest of creating the more flexible environments that respond to the needs of working parents, we can expect employers to give more attention to flexible schedules, to policies that permit employees to work at home, to more part-time options. All of these options will greatly increase the ability of parents to combine career and child rearing and might be encouraged through changed regulations.

There are, however, some counterbalancing considerations. Current Labor Standards at the Federal and State levels protect workers from working more than a certain number of hours per day or at home under certain conditions. Historically, unions have lobbied strenuously against some of the practices that we now see as offering freedom from the restrictive scheduling of the work place. Much of the apparatus of government regulation has been put in place to protect against abuses associated with freedom to modify schedules, to use part-time workers, to offer piece work employment. There is doubtless reason to remain concerned about possible abuses associated with practices that may offer today's more diverse workforce more flexibility, especially since it is not always easy to establish the intent behind these practices.

There are major obstacles to overcome in making it less costly for workers with children -- be they men or women -- to combine careers and parenting. Real progress will involve a partnership of business and all levels of government. There are specific roles appropriate to each. Since we are still in the midst of a major transition in our labor force, many of the roles for both business and government have not yet been fully defined or resolved. The changes that need to take place are, however, inevitable. It is too late to turn back; it is no longer possible to act as if the worlds of work and family are independent. We can not afford to underutilize our human resources or jeopardize future generations of workers with policies that respond to yesterday's issues.

RESEARCH AGENDA

There are many gaps in our knowledge about the nature of the tradeoffs involved in career and child rearing and in the costs of the conflicts to individuals, business, and society as a whole. The major issues that require research include:

- What are the most effective ways for employers to increase work place flexibility? What can be learned from experiments and practices from other countries? What are the costs and benefits of these practices to workers, to employers?
- To what extent can polices and practices that afford greater support to parents attract new workers into the labor market? Will the gains made by attracting new workers be offset by reductions in work by current workers (going at least temporarily to part-time status)?
- To what extent is productivity affected by family problems and responsibilities? Do employer supports like on site centers, greater flexibility, affect productivity indicators? There has been some research on these issues, but the methods of measurement have not been sufficient to yield good cost and benefit estimates.
- Is it feasible in some industries to let people choose their hours of employment? Can the needs of business accommodate this type of scheduling flexibility?

NOTES

1. The importance of access to child care for participation in the labor force has not been lost on programs that aim at moving low income women from the welfare rolls to the employment rolls. The most successful programs are those that assure access to child care for women who need it. (Mass ET) The recently enacted Welfare Reform legislation in fact makes provision of child care a major ingredient in welfare employment programs. Without subsidized child care, women on welfare have very little chance to make a successful and long term transition to employment.

2. The good news is that turnover, absenteeism, and tardiness - and the stress on parents worrying about poor or unreliable arrangements - does decline with additional support from the employer. In one of the few studies to address the impact of child care supports offered by employers, it was found that providing such supports did reduce turnover and absenteeism (Mother in the Workplace Study, 1987). While employers cannot solve the child care problem alone, they can do a great deal to be more accommodating to parents who deal with difficult and unreliable care arrangements.

3. While these data tell a story that indicates a very unequal distribution of work, they are averages that combine hours of work for all men and women between 25 and 64.

4. The trends in the status of children are also very disturbing and may be related to some of the difficulties in the current lack of support for working parents. For instance, during the 1960s and 1970s, there were significant declines in test scores, increases in obesity, in the rate of suicide, in the incidence of poverty among children. In fact the rate of poverty is higher among children than any other group.(Fuchs, 1988)

5. Analyzing all the issues related to dependent care is outside the scope of this paper. The discussion here is intended to give some of the pros and cons of various approaches from the point of view of the need to support the mixing of careers and parenting.

REFERENCES

Arthur, Michael "The Career Concept: Challenge and Opportunity for its Further Application," in Working With Careers. New York: Columbia University Graduate School of Business, 1984.

Bailyn, Lotte. "Issues of Work and Family in Organizations: Responding to Social Diversity," in Working With Careers. New York: Columbia University Graduate School of Business, 1984.

Bloom, David E.Bloom, "Childless Couples." American Demographics (August, 1986).

Bloom, David E. "Putting Off Children." American Demographics (September 1984).

Bloom, David E. "Women and Work." American Demographics (September, 1984).

Bohen, H. and Viveros-Long A. Balancing Jobs and Family Life. Philadelphia: Temple University Press, 1981.

Burden, D. and Googins, B. Boston University Balancing Job and Homelife Study. Boston: Boston University School of Social Work, 1986.

Bureau of Labor Statistics (BLS). "Employment and Earnings Characteristics of Families: Fourth Quarter, 1988." Washington, DC: U.S. Government Printing Office, 1989.

Census Bureau. "Fertility of American Women: June 1985." Current Population Reports, Series P-20, No. 406.

Collins, Nancy W. et al. Women Leading: Making Tough Choices on the Fast Track. Lexington, MA: The Stephen Greene Press, 1988.

Fernandez, J.P. Child Care and Corporate Productivity: Resolving Family/Work Conflicts. Lexington, MA: D.C. Heath and Company, 1986.

Franklin, Diane W. and Sweeney, Joan. "Women and Corporate Power" in Women, Power and Policy. Ed. Ellen Boneporth and Emily Stoper. New York: Pergamon Press, 1987.

Fuchs, Victor R. Women's Quest for Economic Equality. Cambridge, MA: Harvard University Press, 1988.

Galinsky, Ellen. "Child Care and Productivity." Paper commissioned by the Child Care Action Campaign, 1988.

Galinsky, Ellen. "The Impact of Supervisors' Attitudes and Company Culture on Work/Family Adjustments." Bureau of National Affairs, Course Materials, 1988.

Galinsky, Ellen and Hughes, Diane. The Fortune Magazine Child Care Study. New York: Bank Street College of Education, 1986.

Haas, Linda. "Equal Parenthood and Social Policy - Lessons from a Study of Parental Leave in Sweden." Paper presented at Wingspread Conference, University of Wisconsin - Madison, 1988.

Heidrick and Struggles. "The Corporate Woman Officer." 1986

Johnston, William B. Workforce 2000: Work and Workers for the 21st Century. Indianapolis: Hudson Institute, 1987.

Kanter, Rosabeth Moss. Men and Women of the Corporation. New York: Basic Books, 1977.

Kanter, Rosabeth Moss. Work and Family in the United States. New York: Russell Sage, 1977.

Korn/Ferry International. "Executive Profile: Corporate Leaders in the Eighties." 1986

Levitan, Sar A. and Conway, Elizabeth A. "Raising America's Children: How Should We Care." Graduate Institute for Policy, Education and Research Working Paper, George Washington University, 1988

Mellor, Earl F. "Shift Work and Flextime: How Prevalent Are They?" Monthly Labor Review (November, 1986)

Morrison Ann M. et al. Breaking the Glass Ceiling: Can Women Reach the Top of America's Largest Corporations? Reading, MA: Addison-Wesley, 1987.

NCJW Center for the Child Report. "Employer Supports for Child Care" (August, 1988).

Naisbitt, John and Aburdene, Patricia. Re-inventing the Corporation. New York: Warren Books, 1985.

O'Connell, M. and Bloom D.E. "Juggling Jobs and Babies: America's Child Care Challenge." Population Trends and Public Policy, Number 12. Washington, DC: Population Reference Bureau, 1987.

Robinson, John P. "Who's Doing the Housework." American Demographics (December, 1988).

Rodgers & Associates. Final Report: Dupont Survey. March, 1988.

Rodgers & Associates. Final Report to Proctor & Gamble. April 1983.

Rodgers & Associates. Report to NCNB Corporation. June 1986.

Schwartz, Felice N. "Management Women and the New Facts of Life." Harvard Business Review (January/February 1989).

Sutton, Charlotte Dedren and Moore, Kris K. "Executive Women - 20 Years Later." Harvard Business Review (September/October, 1985).

Taylor, Alex. "Why Women Managers Are Bailing Out." Fortune (August 18, 1986).

Trost, Cathy. "The New Majorities." Wall Street Journal, March 24, 1986.

Voydanoff, Patricia. Work and Family Life. Newbury Park, CA: Sage Publications, 1987.

Winfield, Fairlee E. The Work and Family Sourcebook. Greenvale, New York: Panel Publishers, Inc., 1988.

_____________________. "Relocation Reluctance? Lets Consider the Two-City Alternative." Reprinted in The Work and Family Sourcebook, 1988.

32. THE EFFECTS OF MANDATING BENEFITS PACKAGES

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THE EFFECTS OF MANDATING BENEFITS PACKAGES

Paper No. 32

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The purpose of this paper is to inform policymakers and the public about the potential labor market consequences of government mandating of employee benefits. Both theoretical and empirical economic arguments for and against benefit mandating are presented and assessed. In view of the continuing policy debate over health care and parental leave, these two areas are the focus of special attention in the discussion below.

It should be stated at the outset that the paper's objective is to evaluate rather than to support or undermine policy proposals to mandate benefits for US workers. First we examine the role of employee benefits in the US labor market, seeking to explain why some firms and workers are less likely to have particular benefits, or have less generous benefits, as compared to others. Next, we discuss several rationales for mandating benefits, presenting the pros and cons from an economic policy viewpoint. Having established the policy context, the third part of the paper then outlines the likely effect of mandating benefits on key labor market outcomes. Available evidence from related literature is provided, and where possible special problems specific to small firms are emphasized. A final section summarizes and offers specific policy recommendations that should be considered when designing a mandatory benefits package. We also identify important remaining research questions for the benefits fields and describe the data necessary to address these.[1]

I. Understanding Why Employee Benefit Coverage is Uneven

Broadly defined, an employee benefit is any form of nonwage compensation. In this paper we narrow our focus to what is conventionally termed "voluntarily-provided benefits" which include payments in kind such as employer-provided group life, health and disability insurance programs; deferred compensation, primarily in the form of company-sponsored pensions and other retirement savings vehicles; and more recent arrivals to the benefit scene such as subsidized child care arrangements, health spas, legal assistance in divorces and house closings, and flexible (cafeteria) benefits, among others. All told, voluntarily provided benefits constitute 25-30% of private sector payrolls. This category of benefits must be distinguished from "legally required" benefits mandated by law and funded through special payroll taxes (e.g. Social Security, Workers' Compensation, Unemployment Insurance); these latter comprise roughly 10% of private sector compensation. Company contributions for both types of benefits have grown steadily over time until the last five years, when employer benefit outlays have moderated somewhat (Andrews, 1988; Woodbury, 1989).

There are marked differences in the distribution of voluntarily provided benefits across workers and firms. For instance, a unionized male worker with a long-term and full-time attachment to his job is far more likely to have life and health insurance coverage and a pension plan, as compared to a lower-wage female worker, or a black employee, or a short-term or part-time worker. Researchers have also documented the fact that large firms tend to offer more nonwage benefits and a wider variety of such benefits than do small firms (Andrews, 1989; Frumkin, 1986; Bell and Marclay, 1987). For instance, over 80% of small as well as medium and large firms offer paid vacation time, but the prevalence of health and retirement coverage is much smaller among firms with fewer than one hundred employees, as compared to larger firms (see Table 1).

Table 1

Fraction of Full-time Employees Participating in Company Benefit Plans by Firm Size (1987)

	Fraction of Employees Participating in Benefit Plan in:	
Benefit Plan	Medium & Large Firms	Small Firms
Retirement /Pension	91%	43%
Health Insurance	96	75
Life Insurance	96	59
Paid Time Off		
Vacations	99	81
Paid Lunch Break	10	19
Sick Leave	67	26
Disability Insurance (Long term)	48	26
Other		
Educational Assistance	76	23
Employee Discounts	57	35
Child Care	1	4

Note: Medium and large firms are those classified as having 100-250 employees, depending on the industry. Small firms are classified as those with fewer than 100 employees.

Source: Andrews, 1988.

This pervasive unevenness in benefit coverage is partly a reflection of worker and firm differences in their valuation of employee benefits. High-wage employees value benefits which permit them to shelter compensation from tax: for instance, if an employer picks up a $2000 health insurance premium, this health benefit is currently not taxable while the equivalent in cash income would be subject to Federal, state, and Social Security tax.[2] Similarly, pension contributions and investment earnings on those contributions are tax-free until retirement, when the individual will be in a lower tax bracket. Hence one reason employee benefits are more prevalent among higher-paid workers is that they shield some compensation from higher marginal tax brackets.

There are additional reasons why workers value non-wage benefits in the compensation package. Some employee benefits are designed to help workers accumulate funds that they might otherwise be tempted to spend (Thaler and Shefrin, 1981). Insurance costs are also lower among larger groups of people due to scale economies, administrative cost savings, and risk pooling, making group provision of benefits especially appealing (Mitchell and Andrews, 1981). Insurers prefer to work with groups formed for purposes other than the purchase of insurance to avoid unusual expenses due to adverse selection, so that employee groups have a special advantage in this regard (Beam and McFadden, 1988). One explanation for why union workers have employee benefits is that labor unions appear more responsive to older and stable employees' demands (Freeman, 1981). Putting all these factors together, it seems clear that part of the unevenness in benefit coverage across the working population is due to a concentration of worker demand among high-wage and unionized employees in large firms. Conversely, demand for benefits has been the lowest among low-wage workers for whom the tax shield is worth less, and for whom the need for cash compensation is the greatest.[3]

Another reason that benefit coverage is not universal in the US labor market is that companies differ in the way they perceive the value of employee benefits. Some employers are indifferent between devoting a given sum to wages, say $1000, versus allocating the same sum of $1000 to non-wage benefits: in both cases the expenditure is treated as labor cost and deductible as a business expense. On the other hand, Mumy (1985) finds that some companies perceive benefit expenditures as being worth "more" since contributions reduce payroll taxes such as Social Security and Workers' Compensation payments. In addition, firms also use benefit packages to achieve certain employment objectives: deferred compensation attracts stable workers, pensions are structured to induce early retirement, health insurance plans are tailored to attract and retain certain types of workers, and child-care subsidies may be offered to reduce absenteeism and turnover (Gustman and Steinmeier, 1989; Mitchell, 1982; Sindelar, 1982; EBRI 1989). Firms also structure stock ownership and profit-sharing benefit plans to induce more productivity and serve as a work incentive tool (U.S. General Accounting Office, 1986) More complex analyses have also identified the fact that corporations alter their benefit plans so as to enhance their balance sheets and meet overall corporate goals (Bulow, 1982; Ippolito, 1986).

In overview then, surveys confirm that benefits and wages appear in different mixes from one firm to the next. Labor market research contends that this is the result of differences in employees' demands for benefits, interacting with employers' differential willingness to provide benefits of various kinds. Dollars devoted to benefits come at the expense of dollars that could have gone to wages, though the exact degree of substitutability between the various forms of compensation will vary from one workplace to another.

II. Mandating Employee Benefits: The Policy Context

The uneven distribution of employee benefits in the US labor market has for many years generated controversy among labor analysts. Some argue that no intervention in the market is justified, believing that cross-sectional benefit differences are simply the natural outgrowth of differences in firms', workers', and labor unions' valuation of nonwage compensation (Becker, 1988). Others take issue with this conclusion, suggesting instead that the government should influence or even dictate which benefits should be provided as well as who should receive them. In this section we examine several rationales for and against government intervention in the employee benefit arena, with the goal being an assessment of the issues which must be considered in making sensible government policy.

To clarify arguments, we organize the discussion around two questions: (1) When, if at all, should the government intervene in firms' and workers' election of nonwage compensation such as health or life insurance, pension, or other benefits? and (2) What are the pros and cons of having the government mandate that firms provide nonwage benefits, on the assumption that there is a rationale for government intervention? Each question is taken up in turn.

When, if at all, should the government intervene in firm's and workers' election of nonwage benefits?

Analysts of different political and economic persuasions arrive at very different conclusions about the need for government involvement in benefits provision. We begin by evaluating various rationales offered to justify government intervention in the nonwage benefits area, and then go on to do the same for arguments against the proposition.

One motivation for government involvement in the benefits area is paternalism. Supporters identify a list of "merit goods" or "minimum labor standards" and contend that all should be covered by these; the next step is to argue that the government must require that these be provided "even if the members of the society do not demand them" (Rosen, 1985; p. 64). Inevitably there is disagreement about which items should and do fall into the merit good category. One merit good about which there is relatively little debate at present in the United States is public education, which the government requires (virtually) all school-age children to consume. However in the benefits context there is far more disagreement. If "health" is identified as a merit good, it then follows that healthcare insurance is a benefit to which the government must guarantee access. On the other hand, good health is an elusive concept and insurance expensive. Furthermore, calling something a merit good "is not really a justification for (public) support -- it merely invests a bit of terminology to designate the desire to do so" (Baumol and Baumol, cited by Rosen, 1985, p. 65). In short, the merit good argument does not stand on economic grounds as a rationale for a government benefit mandate. On the other hand analysts recognize that there are other philosophical and perhaps ethical reasons to support (or to oppose) the proposal.

A different justification for government intervention in the provision of benefits stems from information problems. Specifically, when workers and/or firms are poorly informed of the important advantages versus costs of nonwage benefits, they will demand suboptimal levels of such benefits as compared to what would be socially efficient. This may arise, for instance, when people fail to buy health insurance because they are not aware of possibly catastrophic medical costs or cannot accurately judge the long term consequences of not having the insurance coverage. A similar case might be made for family or child care benefits: prior to having children, most people are probably unaware of their future demand for parental leave and high-quality childcare. Another example arises from the fact that even highly educated workers misestimate their expected lifespans (Hamermesh, 1979); as a consequence they will tend to make incorrect retirement savings plans. In such cases, the most clear-cut role for government is to rectify the information gaps where possible by publicizing relevant risks and costs (Mitchell, 1988). In unusual cases when information problems are not easily corrected, the government may perceive a need to require benefit coverage directly. Interestingly, no research has yet shown that this is a serious problem in the health care or family leave area.

A third rationale for government intervention in the benefits arena is externalities. The best-known example in a non-benefit context arises when one individual's purchase of an immunization injection has a direct effect on the health of those around him or her, but that person's decision to obtain the injection typically does not recognize how his or her immunity benefits the rest of society. Requiring all to become immunized is justified by proponents of this view, recognizing that only in this way will the optimal amount of health care be consumed. (Even in this case, however, critics of immunization programs have argued that costs exceed benefits). The externality argument is also used to rationalize government intervention in the unemployment insurance area, by arguing that UI is necessary to force firms to internalize layoff costs they otherwise might not pay for (Ehrenberg and Schumann, 1982).

Similar externalities arise in the medical care area. When someone stays in the hospital longer or consumes more medical care than medically necessary simply because health insurance picks up the bulk of the tab, that individual is imposing higher medical care costs on others. A related problem arises because the medically indigent are frequently subsidized by taxpayers and private insurers (Pauly, 1988). Here the externalities are negative, since indigent peoples' demand for health care is met by hospitals and medical practitioners who then are forced to raise prices for those with health insurance coverage. Recently supporters of parental leave bills have offered similar justifications for their proposals: for instance Sen. Christopher Dodd (D-Conn) recently argued that insufficient maternal leave imposes costs on society later in the form of greater need for remedial education (Bureau of National Affairs, 1989). In such instances an appropriate role for government may be to alter incentives so that individual decisions about how much to demand and supply incorporate spillover effects on others.

A fourth rationale for government intervention in the benefits area is that sometimes private markets are unable to provide insurance coverage very effectively or cheaply. For instance, adverse selection makes it prohibitively expensive for the chronically ill to obtain low-cost health insurance on their own. However if risks of poor health could be pooled over a large enough group, and if people agreed to precommit to such insurance before their adult health status was fully known, the risk spreading so achieved should lower costs for all. It has been argued that the government is needed to create such risk pools for insurance purposes because it has more information than do individuals and can benefit from scale economies of large-scale operation, as compared to private sector initiatives. This may also characterize the market for nursing-home insurance: insurers only recently have begun to offer long-term care policies, partly because the older population has not fully recognized the high risk and high costs of such care. Here the argument is that the government may be able to redistribute and/or internalize risks in ways that the private sector cannot. Similarly, small firms seeking to purchase health care insurance often find that obtaining health coverage for a handful of employees is prohibitively expensive, or else simply not possible if the workgroup is too small. This is because of insurers' fear that risks cannot be adequately pooled over small groups, particularly if there is the possibility for adverse selection on the part of prospective employees. Here again, the argument is that the government can intervene when private markets fail to provide needed insurance.

A final motivation for government involvement in the benefits area is equity. Current tax law permits high-wage workers to avoid paying income and payroll tax on benefits comprising a large component of their compensation, which conflicts with the premise of progressive taxation. As noted earlier, many company contributions to health and disability insurance plans are not taxed at all, while employer contributions to pension plans are taxed only after retirement (generally at lower rates). Some argue that restoring equity requires that the government intervene in the benefits area by mandating coverage of certain forms or types (for instance, benefits nondiscrimination requirements were justified on grounds that they set rules which plans must follow in order to qualify for tax-free status). Many economists contend that equity and efficiency would be better served by taxing all forms of compensation similarly (Munnell, 1988), though real-world policymakers may not have the political leeway to achieve a "first-best" solution to efficiency and equity concerns.

What are the pros and cons of having the government mandate that firms provide nonwage benefits?

Assuming that government intervention can be justified on the grounds just discussed, the question remains as to who can most efficiently and fairly provide these benefits to the relevant population. In other words, one must judge whether the advantages of mandating that employers provide these benefits outweigh the costs of having them do so, or whether some other entity might do it more effectively and in a less costly way.

Arguments in Favor of Employer Provision

Some analysts would contend argue that requiring firms to provide a specific benefits package permits tailoring of the offerings to employees' and firms' needs, while still taking advantage of cost-savings due to group benefit purchase (Mitchell and Andrews, 1981). In contrast, if a government agency were to offer similar benefits, standardization might limit the adaptation of benefits to specific employee and firm circumstances

(Summers, 1988). An additional factor is that employers may also have better information than governmental agencies regarding workers' risks, insurance costs, and benefits; this might make employer-provided plans cheaper as a result of lesser moral hazard.

Several additional arguments have been offered in support of requiring that employers offer mandated benefits. First, some political pragmatists argue that at present there is no more direct way to extend benefit coverage to uncovered employees, in view of current budget deficits. A second rationale recognizes that some benefits are already offered voluntarily in the labor market, and it may be that requiring employers to offer a mandatory benefits package could be less disruptive than would a government tax/transfer program requiring the same general set of benefits. This is because at least the most immediate impact of a mandate would be limited to workplaces where such benefits are not currently offered. In addition, several commentators have noted that the political appeal of a mandate rests on the assumption that putting the burden on company shoulders both preserves the benefits providers market, and also keeps"big government" from growing even larger than it already is (Pauly, 1988; Quayle, 1987). Offsetting this effect is the possibility that for some, labor supply might actually increase under a mandated benefits approach. Empirical evidence on this latter point appears in the next section.

Criticisms of Employer Provision

Though the arguments in favor of requiring that employers provide benefits are numerous, there are also some important criticisms of such proposals which policymakers must confront. Some analysts argue that any government intervention is *per se* coercive and thus must be discouraged; others highlight government enforcement and administration costs. Opponents of the mandated benefits idea have also emphasized equity problems with the proposals: that is, people who do not currently hold jobs would not be helped by mandated employee benefits, for the most part.[4] Certain employers would also be more affected than others: in particular, small firms currently offer fewer nonwage benefits, appear the most constrained by minimum wage laws, and probably face more competitive constraints than their larger counterparts (Small Business Administration, various years). In addition small firms hire more women than do larger companies, so that some worry that the incidence of mandating benefits might fall most heavily on groups others wish to protect (Becker, 1988; Smith, 1988).

Objections raised on efficiency grounds are also worrisome. Mandating benefits raises labor costs for firms without benefits, with eventual negative consequences for wages and employment levels. Affected employers, seeking to pass on the increased labor costs to their workers, will reduce wages (or wage growth) to offset new benefit costs. In some instances all that is required is that employers rearrange the components of compensation moving away from cash toward more benefits, and on net when this can be done in a costless manner there will be relatively little impact on employment, product prices and profitability. It should be noted that even in this instance, some employees' wellbeing will decline when they would have preferred to receive cash wages over the additional benefits they are forced to consume with the benefit mandate. In other instances employers will find it impossible to increase benefits by reducing cash pay, especially where pay rates are constrained by the legal minimum wage. In these cases, requiring higher benefits pushes up labor costs which in turn introduces incentives for affected firms to alter their overall employment levels, curtailing labor usage and eventually reducing production and raising consumer prices.

Fixed versus Variable Cost Benefits Packages

The precise manner in which employers respond depends on how a given policy mandate is structured. One way to frame a benefit mandate is to require that all employees be provided with the same benefit package irrespective of whether that employee works part- or full-time. In this case benefit takes on "fixed costs" characteristics; that is, the employer must bear the same benefits cost irrespective of how many hours that employee actually works. Fixed-cost benefits of this type increase low-wage workers' compensation relatively more than highly-paid employees, so employers will tend to substitute away from low-skilled toward high-skilled labor (Hamermesh, 1988). In addition, those affected will utilize more hours per worker, and probably fewer total worker hours overall (Ehrenberg, 1971; Hart, 1984). How much the total number of employees varies depends on firms' ability to substitute labor for capital and is not theoretically determinable.

The "fixed cost" approach to mandated benefits is not merely a hypothetical notion: in fact, several mandatory health insurance bills discussed in Congress over the last two years take exactly this form. Many of the plans required that a specified set of health care items be provided: for example, one stipulated that employers offer health insurance coverage for physician and hospital services, prenatal and maternity care, limited mental health services, and catastrophic coverage limiting worker out of pocket expenses to $3,000. These specific coverage requirements were to be combined with government-set deductibles, co-payment rates, and exclusion restrictions. Another example of a "fixed-cost" viewpoint may be found in many of the parental leave bills before Congress. Typically these bills entitle employees to 10 weeks leave during which health benefit coverage must continue; this benefit is a per-worker entitlement rather than accruing by the work hour.

An alternative method of structuring a mandated benefit proposes a "variable cost" approach, tying benefit entitlements to hours of work rather than having them accrue on a flat per-worker basis. Those who tout this idea note that a mandated benefits program where benefits are tied to the number of hours worked would probably cost employers and society as a whole less, than would regulation mandating that all employees must be provided with a common set of benefits (Bell and Hart, 1988; Summers, 1988). This prediction assumes that a tax increase would be required to pay for the plan which in turn would induce an across-the board reduction in labor supply. In contrast, under the mandating approach, only the subset of newly covered workers would be immediately affected.

Again, the variable cost approach is not merely hypothetical: a variant of it was proposed by President Carter's Commission on Pension Policy when this body sought to design a mandatory pension proposal over a decade ago. The plan called for a minimum of 3% of each worker's pay to be deposited into a defined contribution pension plan (or something producing equivalent retirement income if it were a defined benefit plan).

In analyzing the likely effect of this and other variable cost mandate proposals, it must be admitted that a portion of the cost increase would be passed on to workers in the form of lower wages. In addition, job loss due to the the substitution and scale effects described above would follow because of that portion of the benefit that could not be passed on. On the other hand, the additional undesirable distributional consequences inherent in a fixed-cost benefit would not apply. From this perspective, then, the variable-cost method of assigning mandated benefits has a somewhat greater appeal on equity grounds.[5] To take a concrete example, requiring employers to provide all workers with a specified number of paid family leave days each year raises costs by a higher proportional for low-paid workers than for higher-paid employees, which could induce shifting away from the now more expensive group. A related case appeared in a recent article about Brazil's decision to mandate maternity leave of four months for all employees. As a consequence of this action, many women were "told they would not be hired because they were pregnant and others...were warned they would loose their job in case of pregnancy...many employers had already signaled that they want to replace young women with men" (Simons, 1988).

Allowing Small Firms To Remain Exempt or Provide Reduced Coverage

It becomes more difficult to predict the likely labor market consequences of mandating either per-worker or variable benefits when portions of the workforce are exempted from the benefit mandate. In point of fact, however, real-world proposals usually have a partial coverage feature because part-timers and/or workers in small firms are often exempted (or may be covered by a somewhat less generous package). Hamermesh (1988) finds that limiting a benefit mandate to a subsector of the economy produces strong incentives for firms to contract out employment, hire temporaries, and otherwise replace "protected" with "unprotected" workers. This could be a particular problem for the health insurance bills currently under consideration which propose to cover only people employed 17.5 hours a week or more. In a parallel manner the proposed parental leave bills before Congress are structured to include only firms with more than 35-50 employees.

Possible Labor Supply Responses

Not only does partial coverage affect demand for labor of different types -- labor supply too may be influenced. While establishing the size of the effect is primarily an empirical question to be addressed below, it is worth speculating about the likely direction of the expected changes. Some predict that women may be less likely to leave their jobs due to childbearing or might seek paid employment during childbearing years if maternity leave were mandated. On the other hand quit rates and absenteeism patterns may change for those newly covered by benefits, and in comparison to workers in the uncovered sector. In general, theoretical analysts conclude that it is probably impossible to predict the complete effect of a benefit mandate when these real-world and interesting extensions are incorporated (Hart, 1984). Empirical evidence is needed to explore whether these different effects are sizeable.

Are Other Policy Goals Thwarted?

A final caution raised about mandating benefit plans is that this policy alters labor costs across workers of different types, which may unexpectedly undermine other public policy goals. For instance, employers required to offer a standard health insurance package or parental leave policy might find it more expensive to employ women workers (Becker, 1988; Cook, 1989). This cost differential could induce some firms to substitute men for women in employment. Similar selection problems could arise for low-income workers where health problems may be perceived to be more likely. In contrast, a publicly funded and operated program which provided the same benefits would spread benefit costs across gender, health status, age, and other factors, removing employers' incentives to become more selective in hiring and retention of now more costly workers.

Overview

In conclusion, there are many reasons to both favor and oppose proposals to have the government intervene further in the employee benefits area, and the rationales differ from case to case. In the case of health insurance, three arguments for government intervention are emphasized in the literature: some people are uninsurable in the private market; some people have insufficient income to buy private health insurance; and externalities in medical care market appear to justify regulation. In contrast two arguments are frequently offered to justify mandating parental leave: some say it is a 'merit good' which all should receive, while others emphasize possible externalities (e.g. some say children who do not 'bond' after childbirth may cause social problems later). When it comes to pension provision, generally the argument is formulated as one where government action is required because improvident workers undersave, or workers overconsume due to insufficient information about their retirement needs. Despite these philosophical differences motivating those who favor mandating benefits of one kind or other, all in favor of the policy seem united in a pragmatic stance, believing that large-scale government provision of new benefits is not realistic in the current budget environment. Those who oppose benefit mandating do so for very different reasons. Some analysts are philosophically opposed, preferring as little government intervention in the labor market as possible, while others point out that employment-linked proposals of necessity leave unprotected the several million currently out of the labor market who would not be helped by a mandated employer-provided benefits plan.

III. Evidence on the Labor Market Consequences of Mandating Employee Benefits

Having identified the key policy arguments for and against government mandating of employee benefits packages, we now move to an examination of empirical evidence on the likely labor market consequences of mandated benefits. Rather than delving into specific legislative proposals, we take a more general approach and refer the interested reader to others' reviews of specific recent benefit proposals (See for instance Morgan, 1987; Meyer, 1988; Rix, 1987; US Congress, 1987; US General Accounting Office, 1988).

The discussion proceeds in two parts. First comes a review of evidence on the likely impact of mandated benefits on compensation and employment. We focus on what the empirical literature has to say on overall hours and employment level adjustments, and the length of time such adjustments might be expected to take. Also noted are differential adjustment patterns across sectors of the economy. Next, the discussion turns to an assessment of evidence on workers' likely responses to mandated benefits. Here we focus on changes in labor supply, turnover behavior, and sorting patterns of workers across the labor market.

Mandating Benefits: Consequences for Compensation Patterns and Employment

Earlier we noted that economists believe dollars devoted to benefits come at the expense of dollars that could otherwise go to wages. Hence the first set of empirical issues to investigate in the mandated benefit context is: if the government mandates a new benefit, what effect will this have on other elements of the compensation package? One literature that might be thought helpful in answering this question examines tradeoffs between different forms of compensation in the workplace. Nevertheless the studies in this genre are often seriously limited by data and estimation problems. One careful study of the public sector found a one-for-one tradeoff between wages and employer-provided benefits (Ehrenberg and Smith, 1979). Taken literally, these results imply that mandating an employee benefit package costing 10% would depress affected workers' pay by the same amount. However private sector studies of wage/benefit tradeoffs tend to find no evidence in support of the compensating differentials theory, and indeed most often report a positive relationship between wage levels and benefits (Mitchell and Pozzebon, 1987; Smith and Ehrenberg, 1983). The jury is still out on whether these generally negative results prove that the theory is wrong, or that error-ridden data simply cannot be relied on to test the hypothesis.

Other forms of adjustment in the compensation package besides employment loss can occur. For instance a 1957 survey in New York state showed that raising retail stores' labor costs for low-wage workers reduced a number of employee benefits including rest and meal breaks, year-end bonuses, paid vacations, sick leave, store discount privileges, premium pay, and other compensation (Wessels, 1980). Precise response magnitudes for this type of tradeoff have not yet been pinpointed, however.

A second line of inquiry on benefit/pay tradeoffs takes a different tack, comparing benefit patterns in states which currently mandate particular benefits with those in states which do not. One such study is that of Trzcinski (1988), who examines whether private sector workers are paid differently in states which mandate maternity leave policies as compared to states which do not. Her results do not paint a consistent picture. In states which treat maternity leave as a special medical disability, she finds that hourly wages for women in small firms are depressed by 0 to 7%, and benefit coverage rates are lower by 0 to 11%. The upper-bound responses seem unbelievably large.[6] She also concludes that women's pay is apparently not depressed in states which treat pregnancy and childbirth leave like other disability leaves. (Men's pay was not depressed in any of her results). The author does not offer an explanation for the differential impact by type of benefit plan, but it may be that different funding methods under the two policies contribute to observed differences. When pregnancy leave is formulated as a special disability program with readily identifiable premiums tied to the number of women in a workplace, the funding method will highlight additional costs of hiring women and exert downward pressure on women's compensation and employment. In contrast, treating maternity leave as one of many covered events in an overall disability policy induces more risk-pooling and probably more cross-subsidization in premiums.[7]

In overview then, theoretical research on the pay/benefits tradeoff indicates that mandating benefits will reduce compensation for some groups of workers in the long run. Nevertheless the empirical evidence suggests that the full costs of mandated benefits may not be immediately passed on to private sector workers via reductions in their wages and benefits. In this event, mandating benefits increases employers' labor costs.

Following this line of argument, the next question to be addressed is: if mandating a new benefit raises labor costs, what happens to labor demand? The empirical labor economics literature is of some help in assessing likely response magnitudes. Research shows that there will probably be "only slight substitution away from workers and toward hours, *holding total worker-hours constant* " (emphasis added, Hamermesh, 1988, p. 24; see also Ehrenberg and Schumann, 1982). However overall labor demand in covered firms will decline if there is not a one-for-one tradeoff between increased benefits and reduced wages. In general, the literature suggests that when labor costs rise by 10%, overall labor demand will fall by 1-5%, with most of the adjustment taking place within one year (Hamermesh, 1988; Hart, 1988). Hence the econometric evidence implies that mandating benefits will certainly reduce employment in covered firms, though the exact magnitude depends on the cost increase embedded in any given benefit proposal.

As we have noted above, mandating benefits is likely to alter relative labor costs in addition to overall labor costs. Consider, for instance, the effect of dramatic changes in relative labor costs predicted in a recent assessment of a proposed mandatory health insurance bill (US Congress, 1988). The bill would boost minimum wage workers' total compensation by 15-20% as a result of imposing the mandatory health insurance plan, but would have virtually no effect on higher-wage employees' cash income (most in the highly paid group were asserted to be already covered by a plan meeting the minimum standards). A consequence of changing relative wages in this way would be to induce employers to substitute away from low-wage employees toward more highly-skilled labor and capital. Substitution is likely to be most feasible among lesser-skilled employees, many of whom are minimum wage earners. Indeed, recent estimates show that teenagers, women, and part-time employees comprise, respectively, 36%, 65%, and 66% of all minimum wage workers (Stout, 1988). These workers also tend to be concentrated in small firms and are the least likely to have employee benefits (Small Business Administration, various years).

Studies in a related genre have also noted that low-wage employers may not be able to pass on increased benefit costs when their employees are already at the minimum wage floor. The likely impact in this instance would be reduced employment. From econometric analyses of the minimum wage, we know that that raising pay by 10% among minimum wage workers is associated with a 0.5 to 3% decline in youth employment (see Brown, 1988; Mitchell, 1982; Mitchell and Mikalauskas, 1988), so similar outcomes might be anticipated if benefit mandates of this magnitude were implemented.

Other researchers have simulated the disemployment consequences of pay increases using simulation models. While the models can be criticized on grounds on not representing the "real world" in important ways, they do tend to suggest similar response magnitudes as those unveiled in more conventional econometric studies. For example, Anderson's simulation exercise (1988) points to 160,000 workers losing their jobs as a result of mandating a 3% defined benefit pension; in subsequent years he finds the job loss rate would taper to some 60,000 employees. Anderson also contends that over half of the job loss would be concentrated in firms with fewer than 25 employees, and an additional twenty percent in firms with between 25 and 99 workers. Others have evaluated employment effects of benefit mandates without relying on specific simulation models. Extrapolating from some of their other work, Karen Davis and Edward Gramlich both testified before the Senate Committee on Labor and Human Resources that a mandated health insurance plan which raised low-wage workers pay by 15% would induce job losses for around 100,000 workers. In each of these cases cited, the figures represent more-or-less educated guesses since the assessments are only loosely linked to econometrically robust models estimated with appropriate data. Nevertheless, the fact remains that policy researchers clearly do not believe that job losses would be zero as a result of a mandated benefits plan. Whether disemployment effects are judged to be "large" or "small" depends, of course, on the observer: as (then Senator) Quayle stated, "We may talk in terms of 100,000 jobs as not being a lot, but if you take 100,000 jobs of minority teenagers, that population has suffered enough" (Quayle, 1987).

For reasons of political feasibility, mandated benefits proposals such as the health benefits or parental leave policies described above often exempt some portion of the labor market from coverage, on the argument that cost increases are simply too great for some employees and firms to bear. For this reason, small businesses are frequently allowed to avoid participating or in some cases the benefits they must offer are permitted to be less comprehensive than those required of larger firms. Along the same lines, some reform bills suggest that benefits need not be provided to part-time employees at all, or in lesser amounts. Unfortunately in practice the definition of a "small" firm or a "part-time employee" appears to change from one version of a bill to the next without much attention to how benefit costs and disemployment patterns might vary. The end result, though, is the same: these exemptions have the effect of mandating benefit coverage across only portions of the labor market.

Mandating Benefits: Consequences for Labor Supply

Thus far the discussion has emphasized employers' likely responses to increases in labor costs due to mandated benefits. However there is a reasonable chance that workers also might alter their behavior if firms are required to provide health insurance, family leave coverage, or other benefits. Several different dimensions of labor supply response should be considered, though they are rarely (if ever) brought up in policy evaluations.

Increases in absenteeism may be one undesirable effect of devoting a larger fraction of compensation to benefits. This is particularly true when benefit entitlements accrue on a per-worker fixed-cost basis and the value of the entitlement is not affected by a few additional absences from work. Research shows, for instance, that being eligible for sick leave increases workers' absenteeism rates (Allen, 1981; Ehrenberg et al., 1989; Winkler, 1980). Hence cost estimates of proposed family and medical leave plans which assume constant worker abseentism are probably too optimistic: allowing workers to take a given number of family and medical leave days per year will probably increase absenteeism and should be included in cost forecasts. A similar prediction follows for mandated health benefits, though here the effect is more subtle. Increasing workers' total income by imposing a mandated health plan makes workers better off if wage cuts do not fully offset the new benefit. This produces an income effect inducing them to work less, without materially altering the cost of not working (wages foregone). The end result will be more absenteeism (Ehrenberg and Smith, 1988). On the other hand programs which tie benefit accrual to work time, using a variable benefit format, would have fewer incentives in this direction.

A different labor supply response to mandated benefits must also be examined: turnover. Benefits are frequently structured in such a way to discourage quits and tie workers to their jobs; for instance vesting and other rules make it costly to leave an employer if a worker is covered by a pension (Mitchell, 1982), while waiting periods and exclusion rules probably have a similar effect in the area of health insurance. Changing jobs would become much easier and probably more prevalent if health coverage were made mandatory and if, as some of the proposals were formulated, waiting periods and exclusions for pre-existing conditions were prohibited. However a rise in turnover brings with it higher search, recruitment and training costs, which in turn reduces net labor productivity and output. In other words, an overall decline in output and labor productivity would be a worrisome possibility if mandated benefits prohibited employers from using benefits to discourage job changing, now permitted in existing benefit plans.

Studies show that such partial coverage patterns will induce movements of workers from covered sector jobs to jobs without mandated benefits. Specifically, evidence from the US and several European countries indicate that increases in non-wage costs among "first-tier" workers contributed to more employment in the uncovered "second-tier", including temporary help, part-timers and subcontracted workers (Ehrenberg, Rosenberg and Li, 1988; Hamermesh, 1988; Mangum, Mayall and Nelson, 1985). Expansion of the uncovered sector is troubling in light of the fact that one important motivation for mandating benefits is to reach workers currently lacking such coverage. As yet there are no hard estimates of the likely growth in the uncovered sector given an increase in labor costs in the covered sector, which probably explains why policy studies to date have not accounted for these in any scientific way. What seems clear, however, is that workers in the "second tier" sector are significantly less likely to be covered by employee benefits of all kinds (Williams, 1989). Hence the possibility remains that mandating benefits might not increase benefit coverage among low-wage workers, if this combination of effects is large enough.

There is yet a different way that mandated benefits can and will affect labor supply. Specifically, the chance to qualify for benefit coverage will induce some people to enter the labor force and to remain employed beyond the point they might have otherwise. This is especially probable for new mothers receiving continuation of health care coverage and job reinstatement under the family and medical leave plan, who might have left their jobs (or perhaps been discharged) prior to the reform. While response magnitudes to these particular bills are not known, results from other benefits programs are informative. One study pertinent to this issue demonstrated that raising unemployment insurance payments by 20% increased the fraction of women working by about 1% and women's work hours grew by about 12%. The latter is an entitlement effect: women worked longer so as to meet the minimum income level for unemployment program coverage (Hamermesh, 1979). A related study by Ehrenberg, Rosenberg and Li (1988) also concluded that "supply side responses exceed demand responses" when part-time compensation was raised in the United States over time. In consequence, it must be concluded that coverage-induced increases in labor supply are very likely among groups of people who previously were not offered benefit coverage. Designers of mandated benefits packages must recognize such downward pressure on pay attributable to the supply-side responses, since as we showed above, these tend to be low-wage, low-skilled workers.

A final labor supply response to mandated benefits worthy of consideration here is an issue that arises because workers and firms differ in their valuation of benefits packages. If the government mandates that a fixed-cost benefit be provided to a portion of the labor force, yet workers differ in the way they value it, those valuing the benefit least will tend to move to jobs exempted from the mandate. Evidence of this is offered by Scott, Berger and Black (1989), who warn that "enactment of this legislation would increase the amount of labor market segmentation faced by low-income workers" (p.228). Unfortunately likely response magnitudes cannot be computed from the numbers given in that study.

Despite the importance of supply-side responses, few policy analysts have recognized them when discussing the potential consequences of mandating benefits. This is certainly an area where more research would be valuable. Inevitably, those interested in labor market efficiency must be troubled by the finding that mandated benefits probably increase absenteeism and turnover. Those focusing on equity would, in addition, be concerned about likely increases in labor supply due to mandated benefits, which have the beneficial effect of tying low-wage workers to the market more closely, but also of driving down this group's wages. In addition, it appears that mandating a fixed-cost benefit would probably have the largest supply-side effects, while allocating benefits on a variable per-hour worked basis might well have smaller labor supply consequences.

IV. Conclusions and Policy Alternatives

Conclusions

This paper identifies and, where possible, quantifies potential labor market consequences of government mandates of employee benefits. Policy analysts should consider two questions when contemplating mandated benefits: (l) What relative importance should be attached to those who gain under the mandate versus those who lose? (2) Could feasible alternative policies have more beneficial outcomes? Existing policy research suggests the following conclusions:

- Mandating benefits will increase benefit coverage and generosity for numerous workers and their families. Nevertheless, many people lacking insurance coverage will not be helped by this type of mandated employee benefit program.
- Even when mandating benefits does improve benefit provision, there will be offsetting effects. These include wage and other benefit cuts, reduced work hours,reduced employment, and possibly output reductions in covered sectors. Employer bias against "expensive to insure" workers may also result, producing labor market sorting and segmentation.
- Most workers currently without benefit coverage are employees of small firms, women, part-time and minimum wage workers. Nevertheless, most mandated benefit proposals exclude or reduce coverage for these workers to alleviate the financial burden on small firms.

Policy Recommendations

Policy analysts evaluating any labor market policy, including the proposal under scrutiny to mandate benefits, should consider and respond to two key questions: (1) What relative importance should be attached to those who gain versus those who lose when a new policy is implemented?; and (2) Could alternative (feasible) policies have more beneficial outcomes?

While a full discussion of these questions in the present context goes outside the purview of this paper, it should be emphasized that deciding whether or not to mandate a given benefit or set of benefits requires the analyst to evaluate and weigh increases in wellbeing afforded to workers (and their families) that would be newly covered by such a mandated benefit, with the pay and the employment cuts borne by the less fortunate. In addition it must be asked what other feasible alternative policy scenarios might be if Congress did not mandate benefits. An option popular with some would be to keep the status quo, letting the market generate its continuing uneven pattern of voluntarily-provided benefits. Others concerned about gaps in insurance coverage instead advocate a greatly expanded government role in the health and pension field supported by taxes and providing benefits for the population at large.[8] Alternatively Congress might take a middle road offering incentives such as tax subsidies for employers who expand benefit coverage, without directly mandating additional specific benefits. While this last approach has the virtue of encouraging insurance coverage among employees, it would not help those without jobs. It does seem that proposals which cost the Treasury will be sternly regarded in this era of "no new taxes".

Given that mandating employer-provided benefits remains a viable option after having done this broader analysis, it remains true that mandates raise labor costs and produce job losses which will probably be concentrated among low-wage workers in smaller firms. However there may be ways to design a mandated benefit so as to reduce these negative effects somewhat. We have argued above that the variable-cost approach -- requiring that benefits accrue at a percentage rate per worker-hour -- has the advantage of reducing the bias against low-wage employees currently without coverage. In contrast, the fixed-cost approach such as that inherent in most current health and family leave proposals makes low-wage workers and the firms that employ them proportionately much more vulnerable to the negative consequences of cost increases. On the other hand, some critics would suggest that a variable-cost approach in the health insurance area would not insure all workers' access to basic and major medical insurance at affordable rates. Similarly, variable-cost pension contributions would not ensure high levels of retirement income for part-time or part-week workers, and along the same lines, pro-rated family leaves would not ensure that all employees get ample paid time off with infants or sick children. Hence those concerned with providing a basic level of social insurance might judge the fixed-cost approach preferable even with its greater potential for more severe disemployment effects among particular sectors of the economy.

Based on the analysis above, the following recommendations are offered:

- While mandating benefits using a fixed-cost structure is viewed positively by some, it raises labor costs most for low-wage workers, inducing substitution away from them toward more skilled employees. Fixed-cost benefits also reduce flexibility in designing benefit packages and are not responsive to worker and firm differences in the demand for benefits. In contrast, a variable-cost format where benefits accrue according to hours worked somewhat mitigates these drawbacks.
- Many firms claim they require tax incentives to help them provide benefit coverage. If tax incentives become necessary for political reasons, they should be paired

with a cap on the overall fraction of payroll that can be used for tax-shielded employee benefit contributions. This would make the tax and the benefit system more equitable as a whole.

- If government decides to mandate more employee benefits, a gradual approach should be taken. Each element of a target mandated benefit package should be ranked in a priority list and justified on both efficiency and equity grounds. Subsequently, after the labor market consequences of one such benefit are evaluated, additional benefit mandates might be considered.
- A separate approach should be designed to meet the needs of those not covered by employer-provided benefit programs.

Remaining Research Questions

Several questions should be addressed in future research if policy analysis is to be useful in guiding decisions on mandatory employee benefits packages. We need to know more about why workers differ in their demand for benefits, and why some firms supply benefits of particular types and levels of coverage while others do not. Only armed with this information will be be possible to understand why voluntarily provided benefits are so unevenly distributed across the labor market.

More research should also be done on the labor market impact of state-level regulations regarding the form and content of benefits. Additional analysis would also be useful on different ways to structure benefits, following up on the variable versus the fixed-cost format. Last but not least, more research is required on the extent to which the low-wage population regards public sources of insurance as a good substitute for private/employer-provided benefits.

To understand these and other important questions in the benefits arena, the research community needs new and improved datasets containing information on both workers and their employers, as well as detail on their wage and benefit compensation packages. In addition, longitudinal surveys on worker consumption of and perceptions of insurance would be most valuable.

NOTES

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[1] Space constraints prevent a discussion of benefits offered to the elderly, such as retiree health insurance benefits.

[2] This is true as long as the employer-provided plans meet nondiscrimination requirements; see Beam and McFadden (1988).

[3] Some of the demand for insurance programs among low-wage workers may be met by social insurance programs. On the other hand it is known that many low-income individuals are ineligible for Medicaid, and those out of the labor force cannot receive Social Security. See Chollet (1988).

[4] The size of the uncovered population depends on the benefit in question. See Chollet (1988), Andrews (1989), and EBRI (1988).

[5] Of course in practice, mandated benefit proposals often have both variable and fixed elements.

[6] A four to five month maternity leave for a woman having two children would probably cost an employer no more than 3% of her lifetime earnings if the woman remained with that employer twenty years (without even taking discounting into effect). Hence the author's upper bound wage responses seem unbelievably large.

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[7] The fact that funding policies matter in the mandated benefit context is also emphasized in some interesting work by Jensen and Gabel (1988) and Jensen, Morrissey and Marcus (1987). They find growing self-insurance of employer-provided health benefits plans; one explanation is that that firms self-insure to avoid state mandates of coverage for specific services including alcoholism, drug and mental health treatment, and chiropractors when they self-insure. An additional explanation for this pattern is that self-insured firms are not required to participate in state risk pools covering people who cannot buy insurance on their own.

[8] A nationally funded and operated health plan would reduce incentives to select against 'expensive' employees, and reduces labor market segmentation due to employee sorting. Specific suggestions to expand the role of Medicaid for the medically needy uninsured population are discussed and evaluated by Chollet (1988) and Meyer (1988).

REFERENCES

Allen, S.F. "Compensation, Safely and Absenteeism: Evidence from the Paper Industry". Industrial & Labor Relations Review 33 (January 1981):207-218.

Anderson, J. "Effects of Mandatory Pensions on Firms, Workers and the Economy." In Government Mandating of Employee Benefits. Edited by Dallas Salisbury. Washington, DC: Employee Benefit Research Institute, 1987.

Andrews, E.S. The Changing Profile of Pensions in America. Washington, D.C.: Employee Benefit Research Institute, 1985.

Andrews, E.S. "An Overview of the Employee Benefit System". Employee Benefit Research Institute. Paper presented at the National Research Council, November 1988.

Andrews, E.S. Pension Policy and Small Employers: At What Price Coverage? Washington, D.C. Employee Benefit Research Institute, forthcoming 1989.

Beam, B.T Jr., and J.J. McFadden. Employee Benefits. 2nd ed. Homewood, Il: Irwin, 1988.

Brown, C. "Minimum Wage Laws: Are They Overrated?" Journal of Economic Perspectives 2 (Summer 1988): 133-145.

Bureau of National Affairs. Daily Labor Reporter 21 (February 2, 1989).

Becker, G.S. "If It Smells Like A Tax and Bites Like A Tax...". Business Week (August 22, 1988).

Bell, D.N.F. and R.A. Hart. "On-the-job and For-the-job Efficiency Labour Payments". University of Glasgow Discussion Papers in Economics. No. 8806. May, 1988.

Bell, D. and W. Marclay. "Trends in Retirement Eligibility and Pension Benefits". Monthly Labor Review (April 1987).

Bulow, J. "What Are Corporate Pension Liabilities?" Quarterly Journal of Economics (August 1982): 435-552.

Chollet, D. "A Profile of the Nonelderly Population Without Health Insurance." In Government Mandating of Employee Benefits. Edited by Dallas Salisbury. Washington, DC: Employee Benefit Research Institute, 1987.

Chollet, D. "Public Policy Options to Expand Health Insurance Among the Nonelderly Population." In Government Mandating of Employee Benefits. Edited by Dallas Salisbury. Washington, DC: Employee Benefit Research Institute, 1987.

Cook, A.H. "Public Policies to Help Dual Earner Families Meet the Demands of the Work World." Industrial and Labor Relations Review 42. (January, 1989): 201-215.

Davis, K. "Testimony" before the U.S. Senate Committee on Labor and Human Resources, 100th Congress, November 4, 1987.

Disney, R. and E.M. Szyszczak. "Protective Legislation and Part-time Employment in Britain". British Journal of Industrial Relations 22 (March 1984): 78-100.

EBRI Issue Brief. "Dependent Care: Meeting the Needs of a Dynamic Work Force." Washington, DC: Employee Benefit Research Institute, December 1988.

Ehrenberg, R.G. Fringe Benefits and Overtime Behavior. Lexington, MA: Lexington Books, 1971.

Ehrenberg, R.G., R.A. Ehrenberg, D.I Rees, and E.L. Ehrenberg. "School District Leave Policies, Teacher Absenteeism, and Student Achievement". Dept. of Labor Economics, Cornell University (February 1989).

Ehrenberg, R.G., P. Rosenberg, and J. Li. "Part-Time Employment in the United States". In Employment, Unemployment, and Labor Utilization. Edited by R.A. Hart. Boston: Unwin Hyman, 1988.

Ehrenberg, R.G. and P.J. Schumann. Longer Hours or More Jobs? Ithaca, New York: ILR Press, 1982.

Ehrenberg, R.G. and R.S. Smith. Modern Labor Economics, 3rd ed. Glenview, IL: Scott, Foresman Company, 1987.

Ehrenberg, R.G. and R.S. Smith. "Who Pays for Pensions in the State and Local Sector: Workers or Employers?" IRRA 32nd Annual Proceedings, Madison, WI: IRRA, 1979.

Freeman, R. "The Effect of Unionism on Fringe Benefits". Industrial and Labor Relations Review 34 (July 1981): 489-509.

Frumkin, R. "Health Insurance Trends in Cost Control and Coverage". Monthly Labor Review (September 1986).

Gramlich, E.M. "Testimony" before the U.S. Senate Committee on Labor and Human Resources, 100th Congress, November 4, 1987.

Gustman, A.L. and T.L. Steinmeier. "An Analysis of Pension Benefit Formulas, Pension Wealth, and Incentives from Pensions". In Research in Labor Economics. Edited by R. Ehrenberg. Greenwich, Conn: JAI Press, forthcoming.

Hamermesh, D.S. "The Demand for Workers and Hours and the Effects of Job Security Policies: Theories and Evidence." In Employment, Unemployment and Labor Utilization. Edited by R.A. Hart. Boston: Unwin Hyman, 1988.

Hamermesh, D.S. "Entitlement Effects, Unemployment Insurance and Employment Decisions." Economic Inquiry 17. (July 1979): 317-332.

Hamermesh, D.S. "Expectations, Life Expectancy, and Economic Behavior." Quarterly Journal of Economics 100 (May 1985): 389-408.

Hart, R.A. The Economics of Non Wage Labour Costs. London: George Allen and Unwin, 1984.

Hart, R.A., D.N.F. Bell, R. Frees, S. Kawasaki, and S.A. Woodbury. Trends in Non-wage Labour Costs and Their Effects on Employment. Commission of the European Communities, Programme for Research and Actions on the Development of the Labour Market. Luxembourg: Office for Official Publications of the European Communities, 1988.

Ippolito, R. Pensions, Economics, and Public Policy. Homewood, IL: Dow Jones Irwin, 1986.

Jensen, G.A. and J.R. Gabel. "The Erosion of Purchased Health Insurance." Inquiry 25 (Fall, 1988).

Jensen, G.A., M.A. Morrisey, and J.W. Marcus. "Cost Sharing and the Changing Pattern of Employer Sponsored Health Benefits." Milbank Quarterly 65(4), 1987.

Mangum, G. , D. Mayall, and K. Nelson. "The Temporary Help Industry: A Response to the Dual Internal Labor Market". Industrial and Labor Relations Review 38 (1985): 599-611.

Meyer, J. "Mandated Benefits for Employees: A Policy Analysis." Report Prepared for the National Chamber Foundation. Washington, DC, 1988.

Mitchell, O.S. "Employee Benefits in the U.S. Labor Market." In IRRA 40th Annual Proceedings, Madison, WI: Industrial Relations Research Association, 1987.

Mitchell, O.S. "Fringe Benefits and Labor Mobility". Journal of Human Resources 17 (Spring 1982): 286-298.

Mitchell, O.S. "The Labor Market Impact of Federal Regulation: OSHA, ERISA, EEO, and Minimum Wage." In Industrial Relations Research in the 1970's: Review and Appraisal. Edited by T. Kochan, D. Mitchell, and L. Dyer. Madison, WI: Industrial Relations Research Association, 1982.

Mitchell, O.S. "Worker Knowledge of Pension Provisions" Journal of Labor Economics 6 (January 1988): 21-39.

Mitchell, O.S. and E.S. Andrews. "Scale Economics in Multiemployer Pension Plans". Industrial and Labor Relations Review 34 (July 1981):522-530.

Mitchell, O. S. and A. Mikalauskas. "The Impact of Government Regulation on the Labor Market." In Government Mandating of Employee Benefits. Edited by D. Salisbury. Washington, DC: Employee Benefit Research Institute, 1988.

Mitchell, O.S. and S. Pozzebon. "Wages, Pensions and the Wage-Pension Tradeoff". Department of Labor Economics Working Paper, Cornell University (revised August 1987).

Morgan, G.G. "Parental Leave and the Child Care Issues." In Government Mandating of Employee Benefits. Edited by Dallas Salisbury. Washington, DC: Employee Benefit Research Institute, 1987.

Mumy, G.E. "The Role of Taxes and Social Security in Determining the Structure of Wages and Pensions" Journal of Political Economy 93 (June 1985): 574-585.

Munnell, A. "It's Time To Tax Employee Benefits". Paper presented at the Industrial Relations Research Association Meetings, New York (December 1988).

Pauly, M.V. "The Incidence of Health Insurance: Is Everyone Out of Step but Economists?" Paper presented at the Industrial Relations Research Association Meetings, New York. 1988.

Quayle, Sen. D. Hearings on S. 1265 before the Committee on Labor and Human Resources, U.S. Senate, November 4, 1987.

Rix, S. "Mandated Benefits and the Work/Family Dilemma." In Government Mandating of Employee Benefits. Edited by Dallas Salisbury. Washington, DC: Employee Benefit Research Institute, 1987.

Rosen, H.S. Public Finance. Homewood, IL: Richard D. Irwin, Inc., 1985.

Scott, F.A., M.C. Berger, and D.A. Black. "Effects of the Tax Treatment of Fringe Benefits on Labor Market Segmentation." Industrial and Labor Relations Review 42. (January, 1989): 216-229.

Simons, M. "Brazil Women Find Fertility May Cost Jobs". New York Times, December 12, 1988.

Sindelar, J. "Differential Use of Medical Care by Sex". Journal of Political Economy 90 (October, 1982):1003-1019.

Smith, R.S. "Comparable Worth: Limited Coverage and the Exacerbation of Inequality." Industrial and Labor Relations Review 41. (January 1988): 227-238.

Smith, R.S. and R. Ehrenberg. "Estimating Wage-Fringe Tradeoffs: Some Data Problems". In The Measurement of Labor Cost. Edited by J. Triplett. Chicago: University of Chicago Press, 1983.

Stout, H. "Propping Up Payments at the Bottom". New York Times. January 24, 1988.

Summers, L.H. "Some Simple Economics of Mandated Benefits." American Economic Review Papers and Proceedings, May 1988.

Thaler, R. and H.M. Shefrin. "Pensions, Savings and Temptation" Graduate School of Business Working Paper No. 81-26, Cornell University (November 1981).

Trzcinski, E. "Incidence and Determinants of Maternity Leave Coverage." University of Connecticut, Department of Economics, April 1988.

Trzcinski, E. "Wages and Employment Effects of Mandated Leave Policies." University of Connecticut, Department of Economics, April 1988.

U.S. Chamber of Commerce. Employee Benefits 1987. Washington, D.C.: U.S. Chamber of Commerce, 1988.

U.S. Congress, Senate Committee on Labor and Human Resources. Background Information on S. 1265. May 11, 1988.

U.S. Congress, Senate Committee on Labor and Human Resources. Hearings: Minimum Health Benefits for All Workers Act of 1987: Part II. Washington, DC: USGPO, November 4, 1987.

U.S. General Accounting Office. Employee Stock Ownership Plans. Washington, D.C.: US GPO, 1986.

U.S. General Accounting Office. Parental Leave: Estimated Costs of the Revised Parental and Medical Leave Act. Washington, DC: USGPO, May 1988.

U.S. General Accounting Office. Parental Leave: Estimated Costs of HR 925, The Family and Medical Leave Act of 1987. Washington, DC: USGPO, November 1987.

U.S. Small Business Administration. The State of Small Business: A Report to the President. Washington, DC: USGPO, 1984, 1985, 1987.

Wessels, W.J. "The Effect of Minimum Wages in the Presence of Fringe Benefits: An Expanded Model" Economic Inquiry 18 (April 1980):293-313.

Williams, H.B. "What Temporary Workers Earn: Findings from New BLS Survey". Monthly Labor Review. (March 1989): 3-6.

Winkler, D. "The Effects of Sick Leave Policy on Teacher Absenteeism". Industrial and Labor Relations Review 33 (January 1980): 232-240.

Woodbury, S.A. "Current Developments in Employee Benefits". Paper Prepared for the Commission on Workforce Quality and Labor Market Efficiency", mimeo, March 1989.

33. INNOVATIVE COMPENSATION SYSTEMS: IMPLICATIONS FOR EMPLOYERS, UNIONS, AND GOVERNMENT

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33. INNOVATIVE COMPENSATION SYSTEMS: IMPLICATIONS FOR EMPLOYERS, UNIONS, AND GOVERNMENT

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Introduction

In recent years, the necessity for organizations to control labor costs, while at the same time increasing productivity, enhancing quality and customer service, has never been more urgent. This has caused a significant increase in the use of alternative methods of compensation including gainsharing and profit-sharing plans, along with newer concepts in compensation administration and design such as pay-for-knowledge, two-tier plans, and lump sum bonuses in lieu of, or in combination with, fixed periodic general pay increases.

The use of alternative compensation schemes is coming at a time when traditional or conventional approaches and techniques are being sharply curtailed. The American Productivity Center (APC) (O'Dell, 1987) reports that the use of across the board pay adjustments were eliminated or significantly reduced by 36.1 percent its sample of firms. See Note 1 for the specification of the survey data. Cost of living adjustments (COLA'S) and merit increases were eliminated or significantly reduced by 27.6 percent and 25.2 percent, respectively. Clearly, the approaches taken to employee compensation in U.S. firms constitutes a radical shift in directions, heretofore unknown. As will be suggested by the analysis below, many of the new forms of compensation are being implemented with only the most limited research or practical data to support them.

Gainsharing/profit-sharing plans are organizational systems for sharing the economic benefits of improved productivity, quality, cost reductions, and overall business performance in the form of regular cash bonuses. Many gainsharing and profit-sharing plans incorporate existing, or develop enhanced, systems of employee involvement. Pay-for-knowledge plans compensate employees based on increasing levels of skill and knowledge, rather than by level, position, or job tenure. Two-tier compensation systems pay newly hired employees at a rate that is lower than incumbent employees. This has the effect of reducing the average wage/salary for the entire employee complement. In a similar fashion, lump sum mechanisms involve one-time cash payments most often in lieu of fixed increases, thus freezing base pay for the period in which the lump sums are employed.

These five forms of alternative pay arrangements are reviewed in this paper. Each section begins with an operating definition of the pay form and the underlying theoretical support or drivers. Also included for each pay form was available data on its use and research data on its impact. The paper concludes with a discussion of the public policy implications.

GAINSHARING AND PROFIT-SHARING

The gainsharing and profit-sharing concept is not new. Several firms initiated profit-sharing plans in the first half of the nineteenth century. The Scanlon Plan began in the 1930's. Rucker Plans first appeared in the 1940's. Although they began as attempts to save companies from financial disaster, by the 1950's many plans reflected a broad philosophy and a changed relationship between unions and management. Although first considered applicable only to the private sector, particularly in traditional heavy manufacturing, gainsharing and profit-sharing plans may now be found in the other areas of manufacturing and in the non-for-profit (such as health care) and government sectors.

Gainsharing and profit-sharing plans offer new strategies toward employee compensation, new management practices, new methods of providing employees with economic education as to the shifting competitive environment, and additional opportunities for cooperation between employers and unions. From an employer perspective, gain/profit-sharing plans offer an opportunity to enhance the performance of the organization and improve employee loyalty and commitment. From an employee perspective, these plans offer an additional earnings opportunity, information sharing and involvement in decision-making, as well as a demonstrated equitable sharing of performance improvements.

Gainsharing and profit-sharing are examined in this paper as unique concepts although profit-sharing could be considered one measure of gainsharing. This is due to several reasons, summarized more fully in the sec[illegible]d, Differences Between Profit-Sharing and Gainsharing. First, p[illegible]g tends to operate in two distinct fashions - deferred a[illegible]ution. Deferred distribution plans do not pay current bon[illegible]oyees, but rather defer the profit-sharing monies owed to employees generally for the purposes of providing funding for a pension or additional funding for a supplemental retirement vehicle. Cash distribution profit-sharing plans pay bonuses in the period in which they are earned. As a result, cash distribution profit-sharing plans share some of the same motivational potential as gainsharing plans. Some profit-sharing plans are based on division, plant or business unit profitability, rather than corporate results. This form of profit-sharing is also closely allied to gainsharing. Further complicating the profit-sharing concept is that some plans are mixed in that a portion of monies earned are distributed to employees in the current period, while a portion is deferred.

Second, academic research has tended to arbitrarily separate profit-sharing and gainsharing in the study of reward systems, with profit-sharing more likely to be investigated by economists and gainsharing more likely the province of behavioral scientists. Third, some companies have policies prohibiting the use of profit-sharing while permitting gainsharing plans. Fourth, some unions prefer gainsharing plans rather than profit-sharing as a form of reward systems, as workers have more control over the elements contained in a gainsharing plan. Fifth, many facilities and plants are financially structured as cost centers as opposed to profit-centers, and therefore, the profit-sharing concept is not appropriate.

McKersie (1986) has pointed out an important theoretical and practical distinction between gainsharing and profit-sharing. McKersie views gainsharing plans as motivational in nature, that is, to enhance the performance of a specific work unit through enhanced employee motivation and performance. In contrast, profit-sharing plans are designed to provide greater organizational equity by "sharing the fruits" (p. 7) of the organization's performance. Hence, gainsharing may be viewed as a "plant" program whereas profit-sharing is an organization wide effort.

In assembling this report, a major disclaimer must be offered. As Ehrenberg and Milkovich points out, much of the gainsharing research is "testimonial and anecdotal" (Ehrenberg & Milkovich, 1987). White (1979) has noted that past studies of gainsharing plans have suffered from an absence of empirical data and weak research designs. This has been due to: (1) the difficulty and expense of conducting research with organizations as a unit of analysis; (2) the inability to use sophisticated statistical techniques because each organization constitutes a single unit of analysis; (3) the inability to maintain strict research designs; and (4) the failure of academic evaluation to reward this type of work. Hamner (1988) has shared some of the same reservations, while Florkowski and Schuster (1989) have expressed similar concerns about the state of profit-sharing research.

GAINSHARING

Definition and Theory

Gainsharing plans formerly known as productivity sharing plans are organizational systems for sharing the benefits of improved productivity, cost reductions, quality, and/or overall business performance in the form of regular cash bonuses (Schuster, 1987). Gainsharing plans normally supplement rather than replace, existing compensation systems. In many cases, gainsharing plans also include provisions for employee involvement or seek to stimulate further involvement in those locations that already have it. Gainsharing plans may include as participants all employees in the organization or a segment of them. For example, Scanlon Plans include all employees (hourly and salaried), while Improshare plans more typically include only hourly employees.

Several theories have been offered to explain gainsharing success. Some of these theories have focused solely on Scanlon Plan success, while others have looked more broadly at gainsharing generally. Frost, Wakely, and Ruh (1974) on Scanlon Plan success, point to the value of participation through high levels of employee involvement and reinforced by the payment of a bonus (equity sharing).

A more broad based organizational view of Scanlon Plan success is taken by Cummings and Molloy (1977). They point to the effects of participation (skill utilization, higher level needs fulfilled, greater employee control) and rewards (enhancing effort-reward contingencies and labor management cooperation). In addition, they also focus on enhanced labor-management trust and communication as key factors.

Again of Scanlon Plan success, Goodman & Moore (1976) utilize expectancy theory to tie worker beliefs about participation (effort) and performance contingencies.

In looking at gainsharing more broadly, Geare (1976) asserted a compensation oriented approach more reflective of traditional piece work schemes. Workers motivation is increased because they are paid for productivity gains. Bullock and Lawler (1984), in summarizing 30 case studies, point to three sets of factors that may be related to plan success. They included structural factors (involvement structures, measures, amount distributed to employees, payout period), implementation factors (employee involvement, use of consultants, objective setting), and situational variables (union/nonunion, technology, size, management style, business climate).

Schuster (1986) suggests enhanced employee commitment, that is identification with the firms goals and objectives and greater effort on behalf of the organization, resulting from involvement and financial sharing, as well as communication, labor-management trust and implementation. Greater identification and effort is suggested to create productivity gains which are then shared. Finally, Hamner (1988) suggests that gainsharing is driven by a shift in the "wage/effort" bargain. That is, employees contribute to productivity gains through ideas, participation, and effort, and are rewarded for them. Hamner states, "the incentive of economic gain should act to release the extra effort necessary to generate it and create sufficient surplus value for employees and employers to share" (p. 333).

Use of Gainsharing

As noted above, there has been a significant increase in the use of gainsharing plans. Recent survey data from the American Productivity Center (O'Dell, 1987) show that 73 percent of all gainsharing plans were begun since 1980 and are in goods producing as opposed to service industries. The same survey showed that 211 of 1598 responding firms (13 percent) had a gainsharing plan. Although gainsharing plans predominantly occur in the traditional manufacturing sector, gainsharing has spread to less heavy manufacturing, petro-chemicals, and into the service and not-for-profit sector, and government sector. A recent example is the use of productivity gainsharing for civilian employees of the United States Army (Miller & Schuster, 1986).

There are several major forms of gainsharing in the United States. These include: Scanlon, Rucker, and Improshare Plans, productivity and waste bonus and other plans which are either modifications of the named plans (for example, Scanlon multi-cost) or custom/locally developed plans.

There are seven major reasons for employers to install gainsharing/profit-sharing plans. These include the following:

(1) Philosophy of Management:

Gain/profit sharing reflects a broad philosophy of management. It is used to increase employee identification with, and commitment to, the organization by providing opportunities to participate in decision making (in some firms especially Scanlon firms) and to share financial gains. The British refer to this as financial participation. One union leader has recently stated that workers had the right to share profits (Majerus, 1984).

(2) A Management Tool to Increase the Performance of Hourly Workers:

Gainsharing plans are used in the same manner in which individual incentives are used. These plans are often shorter term in commitment, do not permit participation by salaried employees, are unlikely to have employee involvement and use very classical measures of performance.

(3) An Opportunity to Leverage White Collar Performance:

These firms have a need to manage and motivate salaried employees. The bonus reward system is designed to provide an incentive to salaried employees to induce better performance.

(4) A Method of Relating Compensation to Organizational Performance:

Some firms use gain/profit sharing as a way to relate employee compensation to the performance of the organization. Annual increases in compensation would be closely monitored, but employees would receive sizable bonuses in years when business conditions were good, and little or no bonus when the performance of the business did not warrant it. This approach is receiving increased attention from economists, who argue that it would help firms to be more competitive by making labor costs more sensitive to economic cycles, thus reducing inflation, and would reduce unemployment during recessionary periods by lowering the cost savings from layoffs (Mitchell, 1982). Weitzman (1985) has put the issue succinctly.

> "Our macroeconomic problems trace back, ultimately, to the wage system of paying labor. We try to award every employed worker a predetermined piece of the income pie before it is out of the oven, before the size of the pie is even known. Our 'social contract' promises workers a fixed wage independent of the health of their company, while the company chooses the employment level. That stabilizes the money income of whomever is hired, but only at the considerable cost of loading unemployment on low-seniority workers and inflation on everybody - a socially inferior risk-sharing arrangement that both diminishes and makes more variable the real income of the working class as a whole."

(5) A Vehicle for Change and Development:

These firms have found that financial rewards can be effectively employed to change longstanding attitudes and behavior, thus revitalizing more mature facilities. Sharing in these environments along with other strategies can result in dramatic improvements in labor relations.

(6) A Replacement or Alternative for Individual Incentives:

A significant number of firms are eliminating piece work incentives because of their costs, negative impact on employee relations, and lack of consequence with new systems of manufacturing. This issue is discussed further below.

(7) A Mechanism for Recapturing Pay Concessions/Smoothing Pay Containment:

A number of companies and unions agreed to institute gainsharing plans to offset concessionary reductions in wages and benefits. Higher productivity, cost reductions, and improved quality were used to generate bonuses to compensation employees for reduced wages. The same strategy was used in pay containment situations, often with lump sum increases combined with gainsharing. Lump sums are discussed in the section of this paper devoted to that topic.

The Special Role of the Scanlon Plan

The Scanlon Plan has been on the American industrial relations scene for nearly fifty years. Developed by a former United Steelworkers local president, the Scanlon Plan enjoys wider acceptance among unions.

Initially begun to help floundering companies avoid financial distress, the Scanlon Plan has enjoyed continued recent use in successful companies.

A typical Scanlon Plan contains the following elements: (1) all employees participate in the plan; (2) high levels of employee involvement through the use of Production Committees and other devices; (3) a financially based bonus formula that relates compensation costs to the sales value of production; (4) careful selection criteria to introduce the plan - Scanlon consultants require considerable upfront management commitment; and (5) a vote by employees to accept the plan with normally very high criteria to support its adoption.

Those are the structural elements of a Scanlon Plan. The reality is that the Scanlon Plan is more of a philosophy of management than a compensation plan. That philosophy is based on identification with the firm and its customers, participation by employees, and equitable sharing of performance gains. The Scanlon philosophy is one of the most humanistic in American management and as a result, research results based on Scanlon Plans may not, and probably are not, generalizable to other non-Scanlon firms with gainsharing plans.

The following have been used to describe Scanlon Plan firms:

> "boldest attempt at employee participation in the United States. Its leadership model approaches the democratic values held by non-industry institutions" (Katz and Kahn, 1966, p. 381).
>
> "...perhaps the most significant contribution to union-management relations that has been made in the course of the past two decades" (Golden, 1958, p. 2).

The Experience with Gainsharing

Despite a fifty year history, there is only very limited research on gainsharing plans. Much of what does exist is very limited.

There have been three streams of empirical research on gainsharing. Although this research is neither conclusive, nor does it contain much in the way of breadth, one statement that can be made with some degree of assurance is the fact that there is no evidence to suggest that organizations with gainsharing plans are worse off than they would otherwise be. In fact a substantial amount of gainsharing research would have to be regarded as favorable.

The first group of studies were based on dissertations and technical reports conducted by master's degree students at the Massachusetts Institute of Technology. These were predominantly case studies and in general reported favorable to very favorable performance, employee relations and labor relations results.

The second set of studies was conducted at Michigan State University. These studies primarily report the results of attitudinal data collection, but provide solid empirical results. Unfortunately, the entire sample of employees were from firms with the Scanlon Plan. Because Scanlon Plan firms employ very rigid selection criteria, it is questionable the degree of generalization that can be made to other firms that are more traditional in nature.

This research reports the following results concerning employee and management attitudes toward the Plan (Goodman, Wakely, and Ruh, 1972). In a sample that included 21 sites of six Midwestern companies and involved 2636 respondents, employees reported that:

(1) The plan was more than a nice idea.

(2) It was worthwhile to offer suggestions.

(3) The Production Committees were the principal vehicle for improving company efficiency.

(4) The plan helped employees to do their jobs better.

(5) The plan increased employee knowledge of the company.

(6) The plan improved trust and confidence between employees and the company.

(7) The plan helped the company's financial situation, although management thought it had a bigger impact than did the employees.

(8) The plan encouraged employees to work harder.

Additional work from the same sample identified the level of employee involvement and management and chief executive commitment to participative policies as predictive of success (White, 1979).

The recent American Productivity Center (O'Dell, 1987) study reports on employee earnings from gainsharing/profit-sharing plans. The different types of gainsharing plans have produced a broad range of bonus earnings over the period 1981-1985. Median bonuses of firms with the Scanlon Plan ranged from 5-9.2 percent, Improshare firms paid between 5-8.5 percent, profit-sharing 6.5-8.5 percent, and custom plans from 5-10 percent. When mean data were examined the results tended to be somewhat higher. This suggests, and the author's experience supports, that some plans pay little or no bonuses, while others pay in excess of ten percent. However, as the median data suggest, the typical employee is likely to receive a bonus between 5-10 percent.

The most recent work has looked at the impact on organizational performance of a collection of gainsharing plans. In this instance four "studies" are noteworthy. The first was a survey by the General Accounting Office (GAO) (1981). The GAO interviewed 36 firms with gainsharing plans, with two-thirds (66 percent) providing some "hard" data. An even smaller number had done formal evaluations. Ehrenberg and Milkovich summarize these results as follows:

> "...the oft-quoted GAO results are that gainsharing improved performance by 17.3 percent at 13 firms with sales less than $100 million, and in firms with sales of 100M or more, the average improvement was 16.4 percent." (Ehrenberg and Milkovich, 1987, p. 111).

A second survey by the New York Stock Exchange (1982) reported that 15 percent of its respondents with 500 or more employees had a gainsharing plan and that 70 percent of the responding firms reported that gainsharing resulted in improved productivity.

The third survey by the American Productivity Center (O'Dell, 1987) of 212 firms asked the impact of four types of gainsharing plans - Scanlon, Improshare, profit-sharing, and custom designed. The survey reports the results of those firms indicating "positive" or "very positive" results. There are some interesting findings.

(1) Gainsharing plans are reported to have a more favorable impact on productivity than profit-sharing.

(2) Scanlon plans are reported to have had a slightly bigger impact than the other forms of gainsharing.

(3) The Scanlon plan had a more favorable impact on costs and quality than did profit sharing or Improshare plans.

(4) Improshare had a bigger impact on employee pay than did the other forms of gainsharing.

These results would appear to be consistent with what is known about these plans. Profit-sharing plans pay out infrequently, and are based upon more global measures of organization performance often times outside the control of employees. Therefore, their impact on productivity would be expected to be less. The Scanlon Plan encourages employee involvement teams. Therefore, it would be expected to have a more favorable impact on quality and costs than would Improshare, which is primarily a time savings based system. Because Improshare more closely resembles traditional individual incentive systems, with a 30 percent leverage goal, it is not surprising that it had a larger impact on employee pay, than did the other plans which would normally encourage conventional wage administration.

Research by the present author (Schuster, 1983, 1984a, 1984b) on forty-five predominantly unionized firms has been somewhat more sanguine and cautious in attributing accolades to gainsharing. Using formal, rigid evaluation criteria and conservative (time series) statistical procedures described elsewhere, the compilation of results from this research suggests that about 50 percent of firms realized statistically significant productivity improvements over what they would have expected to have achieved in the absence of a gainsharing plan. A leveling effect was noted with firms experiencing an immediate level change followed by a modest upward trend in productivity.

Interestingly, employment was shown to stabilize in a majority of the firms, particularly when compared to national industry control groups. When asked why their employment remained stable when the overall industry had declined, one controller noted that gainsharing had made the company more competitive, allowing it to capture a large share of a smaller market. In addition, the gainsharing had permitted the company to achieve such positive improvements in employee relations that the management was reluctant to lay off employees.

The impact on such variables as labor relations, attendance, turnover, and quality was generally favorable. This finding also finds support in the American Productivity Center study. For example, from 68-86 percent of the firms, depending on the type of plan, reported that the plans had had a favorable impact on labor relations.

One interesting finding of Schuster's work was that the author was able to observe all types of gainsharing plans, Scanlon, Rucker, Improshare, and locally developed. In all categories, there were particular types of plans (for example, Improshare) that succeeded while others failed. This suggests that the type of plan is not the key determinative factor in successful plans. This is consistent with Lawler and Bullock's findings that plans must fit the situation in which they are installed. A combination of the "fit" of the plan to the location, management commitment, and the quality of implementation seem more related to success. Of all the plans, the longest running seemed to be the Scanlon Plans, suggesting that the nature of the management commitment required for a Scanlon Plan gave the philosophy (involvement and participation) more staying power, even when productivity gains were not present to support the plan, and when employee bonus earnings had temporarily deteriorated.

Another observation that must be made is that despite rigorous evaluation procedures, it is nearly impossible to isolate the contribution of gainsharing over other organizational factors as contributing to the effectiveness of the organization. Indeed, factors such as capital investment, changes in management and union leadership, and the general state of the economy can have more of an impact on the performance of the firm than some gainsharing plans. These factors can also have an impact on employee bonus earnings as well.

Differences Between Profit-sharing and Gainsharing

Prior to turning attention to profit-sharing, it is appropriate to note the differences between gainsharing and profit-sharing plans. As noted at the outset, gainsharing and profit-sharing have similar goals, but are often treated differently in the research literature. Below is a more indepth summary of the differences between profit-sharing and gainsharing. Some managers and employees confuse gainsharing and profit-sharing. Table One summarizes the differences. It should be noted that profit-sharing and gainsharing are conceptually the same. Profit-sharing might be regarded as one measure of gainsharing. However, five distinct differences are summarized below.

TABLE ONE

DIFFERENCES BETWEEN GAINSHARING AND PROFIT-SHARING

Dimension	Profit-Sharing	Gainsharing
Time Frame for Measurement	Annual	Monthly/Quarterly
Use of Funds	85%-90% Deferred Compensation	All current compensation
Factors Measured	Total Business Performance * Some Sensitive Information Required * Some Factors Beyond Employees Control	Labor Costs/Hours Sales Material Quality Supplies* * Important Information Not Unduly Sensitive
Company Size	Small Companies Senior Level Employees of Large Firms	Big Companies with Diversified Operations
Financial Structure	Requires Profit and Business Unit	Can be Used in P/L Centers as well as Cost Centers

Gainsharing rewards are based on some measure of productivity, rather than the more global measure of profitability. Many factors that influence profitability (for example, the cost of capital or marketing effectiveness) are beyond the control of facility level actors. Since the goal of most gainsharing plans is to measure and reward employees for those aspects that come within their sphere of influence, gainsharing is often preferred over profit-sharing. Second, in most profit-sharing plans, rewards are measured and paid on an annual basis, whereas with gainsharing the measurement period is most commonly monthly. The frequency of the bonus is likely to increase its value in reinforcing positive employee work attitudes and behavior.

The vast majority of profit-sharing plans provide deferred compensation. Gainsharing plans compensate employees when improvement occurs. The long-time lag between performance and rewards can reduce their motivating potential.

Finally, in most large companies, single facilities and even some divisional ones do not "earn a profit" that could be shared. In financial terms, they may generate operating income, but not profits that should be shared. In these situations, profit-sharing would not be appropriate. Also in large diversified companies the relationship between one business unit and another may be at best limited. Corporate profit sharing is not likely to be meaningful, because employees in these settings are likely to be more attached psychologically to the facility, rather than the company.

As noted above, Improshare plans had a greater impact on employee earnings than profit-sharing and other forms of gainsharing. In a profit-sharing plan, employee earnings are more effected by external conditions than would be the case with a gainsharing plan.

A last point is that a small number of firms maintain both gainsharing and profit-sharing plans with the purpose of gainsharing to be a short-term productivity gain, and profit-sharing as a longer term division of company earnings.

PROFIT-SHARING

If gainsharing plans have been the subject of only limited empirical research, profit-sharing has been subjected to even less. While over the years, the Profit-Sharing Research Foundation has published monographs and technical reports, traditional scholarly research has been very limited. This is the case despite the fact that profit-sharing may have begun in the United States as early as 1794 (Gilman, 1889).

The history of profit-sharing plans in the United States is summarized by Florkowski (1989). He shows sustained growth in profit sharing plans since the 1860's with the largest profit-sharing plan being at Sears, Roebuck & Co. with over $4-billion in assets.

Definition and Theory

As with the definition of gainsharing, profit sharing plans are organizational systems that distribute a portion of the organization's profits according to a predetermined formula. Payments may be paid either in cash or deferred as discussed earlier and are typically paid on an annual basis. Many profit sharing plans contain conditions and *reservations*. Conditions require that a prerequisite level of profitability be achieved before the organization's performance is considered satisfactory to allow for payments to employees. However, once this occurs all profits are included in the calculation. Reservations permanently exclude some amount of profit from the calculation that would be considered a fair return on investment (Florkowski, 1989).

The underlying premise of profit sharing plans is that the work force is capable of influencing company financial performance and will be more likely to do so if the firm agrees to return a portion of its earning back to the employees. Florkowski (1987) has summarized the literature on profit sharing into a theoretical model that focuses on the impact of profit sharing on employee organizational commitment. Variables such as perception of pay equity, performance reward contingencies, influence on decision-making, are said to influence support for profit-sharing, which in turn influences organizational commitment. Committed employees have more positive work attitudes and behavior, labor relations are better, and productivity and quality is enhanced.

In a recent test of the first part of his model, Florkowski and Schuster (1989) found support for pay equity and performance reward contingencies influencing profit sharing support. Profit sharing support then was found to influence organizational commitment. No support was found for the linkage between decision-making and support for profit sharing. Scientific studies linking profit sharing, commitment, and organizational performance have yet to be conducted. As shown below, the evidence that exists is at best marginal and much of it lacks the requisite level of academic rigor.

The Use and Experience with Profit-Sharing

Florkowski (1989) using Internal Revenue Data found that 125,000 new deferred plans were instituted in the period 1980-85. He further notes that there is no "systematically" gathered source on the extensiveness of cash plans. Metzger (1978), however, estimated the number of cash distribution plans operating at the end of 1977 at 120,000. Doyle (1983) has estimated that there are 350,000 profit sharing plans. More recently, the American Productivity Center survey found that 32 percent of its responding firms had a cash or deferred profit sharing plan with 37 percent of the goods producing and 28 percent of the service providing firms using profit sharing plans. The actual number of workers participating in these plans cannot be extrapolated from this data.

The best review of the profit-sharing literature is by Florkowski (1989). He identifies seven studies that investigated the impact on corporate financial performance, twelve that considered the behavioral and attitudinal impact of profit-sharing, eight that dealt with union relations impacts, and three with macro economic considerations. As with other commentators, Florkowski notes the dismaying quality of the research in this area.

The financial effects of profit sharing have been assessed with measures related to sales, income, investment, and stock. Firms with profit-sharing generally have displayed higher levels of growth on such indices than those without profit-sharing. Howard and Dietz (1969) found that profit-sharers outperformed non-sharers in eight of nine industries in a sample of 175 companies for the period 1948-1966. Howard (1979) continued this work for the period 1958-1977 in a study of 202 companies in six industries. In two thirds of the cases investigated, firms with profit-sharing exceeded the performance of non-sharers. The results were consistent across three of the six industries represented in his sample. Metzger (1978) reported that a sample of profit-sharing industrial companies and retailers consistently surpassed the control group of fortune 500 companies in median returns on sales and equity. Two studies of the retail industry obtained similar findings (Jehring & Metzger, 1960; Metzger & Colletti, 1971). When combined, these two analyses show that the level and trend of performance over a 12-year period were better for profit-sharing department stores than for their non-sharing counterparts.

These results seem to hold internationally. Profit-sharers in the West German metal working industry have exhibited higher gross returns on capital than non-sharers (Fitzroy & Kraft, 1986). Estrin and Wilson (1986) reported comparable results for British Engineering and metal working companies. Firms with profit-sharing plans generally earned higher profits per unit of capital than did those that lacked plans.

As with Scanlon Plan firms, executives at firms with profit-sharing have tended to view the concept favorably as well (see for example Metzger (1975) and the New York Stock Exchange (1982)). Seventy-three percent of the executives in the NYSE survey reported that profit-sharing had had a favorable impact on the performance of their firm.

Seventy-four percent of the managerial and professional respondents in another study felt that profit-sharing had impacted positively or very positively on overall performance (O'Dell, 1987). Once again, there is an international flavor to these results with a Canadian sample of executives (72 percent) reporting that greater teamwork and cooperation coincided with profit-sharing (Nightingale, 1980).

Employees seem equally disposed to profit-sharing. One study reported that two-thirds of production workers in one survey indicated that profit-sharing provided a daily incentive, offered a sharing of gains that occurred and permitted employees to share in the growth of the firm (Colletti, 1969). These sentiments were echoed by the profit-sharing participants who were surveyed by Best (1961). As before, there is international support for these findings with Wallace and Hanson (1984) reporting a favorable response to profit-sharing by British employees (cited in Blanchflower & Oswald, 1986).

There is some evidence that profit-sharing can improve labor-management relations. Helburn (1966) found that 72 percent of his management and 56 percent of his union respondents identified profit-sharing firms as having a cooperative union-management relationship. Seventy-two percent of the executives surveyed by Brower (1957) stated that union leaders were enthusiastic or favorable toward profit-sharing. Nearly one-half of the executives in an earlier survey felt that their unions had given full approval or cooperation to existing plans (Flippo, 1954). Zalusky (1987) reports that even prior to 1970 the UAW, USW, and IAM had negotiated 21, 22, and 28, respectively, profit-sharing plans.

PAY-FOR-KNOWLEDGE

Definition and Theory

Pay-for-knowledge represents a departure from traditional pay systems. In traditional pay systems, pay levels are tied to the specific job that an employee is assigned to. In contrast, in a pay-for-knowledge system, employees are compensated for the "number, kind, and depth of skills that they develop" (Lawler & Ledford, 1984, p. 6). Employees are permitted to enhance their earnings levels by acquiring new levels of skill or knowledge, without changing job assignments.

Conventional pay systems are based on theories underlying traditional job design and job evaluation procedures. Jobs are designed with limited scope of employee skill, effort, and responsibility, thereby permitting employers to utilize the least expensive labor for each task. In contrast, the theory surrounding pay-for-knowledge compensation plans is linked to new methods of job design (such as socio-technical systems) that focus on greater employee growth, development, and contribution (oftentimes referred to as high involvement/commitment work designs). Employees are encouraged, and the work design and pay system reward increased development of employee knowledge, skill, and assumption of responsibility.

Conventional pay systems appear to be more appropriate and consistent with control oriented management philosophies and organizational structure, whereas pay-for-knowledge compensation plans are more likely to be found in flatter, decentralized, less control oriented situations (Walton, 1965).

Pay-for-knowledge is frequently used in conjunction with other progressive employee programs such as employee involvement as part of an overall approach to human resource activity. Pay-for-knowledge seems to have developed a following in "greenfield" sites in combination with other high involvement systems.

It has been reported that there are two basic approaches to pay-for-knowledge -- multi-skill based and increased knowledge based. Multi-skill based plans which are particularly appropriate for factory settings link pay levels to the number of specific skills an employee learns. In contrast, increased knowledge based plans attach pay levels to increased knowledge and skill within a job category and is considered more appropriate for skill jobs such as skilled trades. Many pay-for-knowledge systems combine elements of both approaches.

The recent Department of Labor study by Gupta, Jenkins, and Curington (1987) effectively summarizes the characteristics of a pay-for-knowledge system. Table Two on the next page summarizes the characteristics of pay for knowledge plans as identified in their study.

Use of Pay-For-Knowledge

Pay-for-knowledge is a term often used to describe related methods of compensation design such as "skill-based compensation, knowledge based pay, multi-skill compensation" (Jenkins & Gupta, 1985). According to the recent study by the United States Department of Labor, there is no way of knowing how many pay-for-knowledge facilities exist. One estimate places the number at over 200, with no estimate of the number of employees covered by such plans.

TABLE TWO

SKILL UNIT CHARACTERISTICS IN PAY-FOR-KNOWLEDGE PLANS

Question	Mean	Median	Number of Plants Responding
How many skill units does your PFK plan include?	19.8	9.5	18
What is the *maximum* number of skill units an employee is allowed to learn in the PFK plan?	14.9	7	15
What is the *minimum* number of skill units an employee *must* learn in the PFK plan?	2.7	1	17
How many skill units do employees *typically* learn under the PFK plan?	5.3	4	15
How many skill units can employees typically *stay competent in*?	4.8	3.5	12
What is the average number of weeks required to learn a skill unit?	32.1	26	16
What is the minimum number of weeks?	23.6	26	15
What is the maximum number of weeks?	42.2	52	13
How long does it take an average employee to learn the maximum number of skill units allowed (in weeks)?	81.2	90	16
After employees have completed one skill unit, how many weeks must they perform that skill unit before being eligible to begin learning a new skill unit?	32.8	26	6
Not including learning time, how many weeks may employees perform one skill unit before they *must* move on to another skill unit?	55.5	60	8

In the recent survey of non-traditional reward systems by the American Productivity Center, 85 of the 1598 participating firms (5 percent) reported the use of pa[illegible]owledge with more than three times as many plans in goods producing rather than service industries, thus indicating a factory bent to pay-for-knowledge.

Sixty-eight percent of the pay-for-knowledge plans were reported to have been introduced within the last five years. Several studies have noted that pay-for-knowledge is commonly used as a component in the design of human resource systems in high involvement work settings (Lawler & Ledford, 1984).

Pay-for-knowledge plans are said to offer a number of benefits (U.S.D.L., 1988). These include greater employee flexibility, less need for staff and supervision, less restrictive work rules, etc. All of these are suggested to be related to enhanced productivity.

Because of the broader array of skills possessed by the workforce, it is suggested that pay-for-knowledge companies are able to staff the organization with fewer employees. The enhanced training of employees permits the organization to operate with fewer employees to cover inefficiencies such as absenteeism, turnover, and to more readily adapt to overtime needs. Because pay-for-knowledge companies often operate with high commitment work teams, managerial functions are frequently included in the pay structure, thus reducing the need for supervisors and other staff employees. Pay-for-knowledge systems have fewer and broader job classifications. This permits greater production efficiencies by allowing greater ease of movement by employees. In addition, pay-for-knowledge systems require broader and more flexible work rules, thus permitting new approaches to work design and further rewards for teamwork and cooperation.

Additionally, respondents were asked to assess their perception of performance improvements resulting from their pay-for-knowledge plan. The following results were reported: (1) higher output (72.2 percent); (2) lower cost per unit (72.3 percent); (3) lower labor costs per unit (66.7 percent); (4) defects were lower (77.8 percent); (5) less turnover (68.5 percent); (6) absenteeism was lower (73.7 percent); and (7) expenditures for nonmanagerial training were higher (76.5 percent). Most of the firms responded that the administrative costs for pay-for-knowledge were either the same or only slightly higher. There were few, if any, negative respondents.

It should be noted that most of the published accounts reporting these benefits would not pass the test of academic research. Much of the positive outcomes from pay-for-knowledge plans could be derived from the fact that most pay-for-knowledge companies are new plants or facilities, and have many progressive management and human resource policies. As a result, these favorable findings need to be reviewed with some degree of healthy skepticism. Despite this, employees seem to be satisfied with the additional earnings opportunities afforded by pay-for-knowledge systems, while employers seem very content with the "potential" productivity benefits, as well as the healthy workplace climate that is created. Pay-for-knowledge should be viewed as one element of an entire new approach to human resource management.

LUMP SUMS, TWO TIER, SALARY STATUS, AND EARNED TIME OFF

In a seemingly never ending battle to contain and reduce wage costs, employers resorted to several devices during the 1980's. Two principal concepts were lump sum in lieu of fixed increases in compensation and the two tier wage/salary structure. Both of these devices became widespread over the last ten years, although recently their use appears to be diminishing as labor markets have begun to tighten.

Lump Sum Definition and Theory

Lump sum payments/bonuses are one-time payments to employees that are given instead of all or part of a base pay adjustment. Lump sum payments do not become part of base pay. Lump sums come in two varieties -- flat across the board increases, and percentage bonuses.

There is no particular theory to support the payment of lump sums other than the fact that they contain the escalation in compensation over a period of several years. In a lump sum situation, a bonus is paid, but the employee's wage/salary remains the same. Other wage and salary based components of compensation also do not escalate. Examples would include pensions, holidays, and vacation, shift differentials, and overtime. It is easy to see that this avoids the year over year escalation and inflation that normally occurs in employment costs. Unions and employees most often oppose lump sums fearing that real wages will decline.

Use of Lump Sums

Recent Bureau of Labor Statistics (BNA, 1988) data show that 2.7 million of the 8.7 million workers covered by major collective bargaining agreements (1000 workers or more) received lump sums. This number reached 40 percent (2.5 of 6.3 million) private sector workers.

In the low inflation years of the 1980's, lump sums have increased from 6 percent and 19 percent in 1984 and 1985 respectively, to one-third in 1986 and 1987 (BNA, 1988). For the first quarter of 1988, the number of contracts with lump sums had escalated to 42 percent. This statistic is supported by the American Productivity Center survey which shows that 30 percent of its responding firms gave lump sum bonuses. Interestingly, the distribution of lump sum bonus firms was nearly equal between goods producing and service industries (31 percent/29 percent).

According to BNA data for 1987 (BNA, 1988), the average contractual lump sum bonus when a flat dollar payment was used was $782 in the first year and $593, and $607 in the second and third years. Using the percentage approach, increases were 3.6 percent, 3.0 percent, and 3.4 percent over three years.

Two-tier Wage Plans Definition and Theory

In two tier wage systems, newly hired employees are paid at a lower rate than the previously hired workforce. Thus, new employees are paid less than employees with longer service.

There are two types of two-tier pay plans: "permanent" and "temporary." Employers with temporary two-tier plans hire employees at a separate and lower wage and/or benefit scale than incumbent employees.

Eventually, their wage and/or benefit schedule merges with existing employees over time. In a permanent two-tier system, newly hired employees may never reach the same wage/benefit status of incumbents.

Jacoby and Mitchell (1986) note that two-tier plans in union contracts can never be truly permanent since the collective agreement is normally negotiated every two to three years. BNA data show that three quarters of all two-tier plans are likely to be temporary with a pay disparity period lasting from 18 - 60 months.

There is no particular theory to support two tier plans, other than to recognize that when a second tier wage/benefit scale is added, it has the effect of reducing the firm's average employment costs and total compensation costs, by reducing of the employees' total career earnings. Needless to say, proponents of two tier would argue that the second tier wage permits jobs to be created that might otherwise not have been by creating a greater economic advantage to the employer.

Use of Two-tier Wage Plans

Although this set up a heretofore unseen inequity in American employment, 11 percent of the APC survey group had two tier structures. More than twice as many firms were in the goods producing compared to the service sector.

Major industries with two plans include airlines (50 percent), aerospace (33 percent), forest paper products (32 percent), transportation (30 percent), building materials (27 percent), and auto/farm equipment (25 percent) (O'Dell, 1987).

APC data show that an average 14 percent of employees are paid on the second tier and that their average pay is 67 percent of first tier employees with like jobs. Two-tier situations have created considerable pressure to correct the "inequity" and many, including one of the earliest and most visible at American Airlines, is being dropped.

Once again, it must be noted that both lump sum and two tier strategies are more effective in loose labor markets. As labor markets tighten, the ability of employers to provide token wage adjustments or pay less is reduced.

Two other innovative pay devices are worth noting, although almost no research has been conducted on these initiatives. All salaried status for hourly employees (subject to Fair Labor Standards Act requirements) has grown to where 11 percent of the APC surveyed, report having them. In an all salaried situation, hourly employees are generally permitted personal and sick time at employer expense in the same manner as traditional salary employees. This helps to bridge the treatment gap between hourly employees and salaried. It is an issue of dignity and respect for many employees and helps to unify the organization. As with many other programs studied such as pay-for-knowledge, all salaried status is most often used in conjunction with other progressive human resource management programs, practices, and procedures.

Earned time-off (6 percent of firms studied) provides time-off in lieu of a monetary bonus. Very little is known about this type of reward. Intuitively, however, it is likely to have appeal to those individuals that have significant responsibilities other than at work.

PUBLIC POLICY ISSUES

There are several public policy issues which are suggested by this review. One of the first is, in what sectors of the economy are innovative compensation systems well suited and likely to be successful. One area demanding consideration, is the degree to which monetary rewards, particularly gainsharing, may be applicable to the not-for-profit (for example, hospitals) and public (government agencies) sectors.

The public sector has many jobs which mirror traditional manufacturing and others that resemble service jobs (for example, hospitals), where gainsharing is being attempted. The public sector has not experienced a great deal of innovation in pay practices and may be fertile ground for experimentation in this area. Certainly, a federal evaluation of experience of federal agencies using gainsharing would be helpful not only to the federal government, but also to state and local employers. There is little evidence of the use of gainsharing in the not-for-profit sector as well. Clearly, the entire issue of gainsharing and profit-sharing is one calling for additional research.

There is a significant absence of research in this area. In a review of compensation practices published in 1987, Ehrenberg and Milkovich (1987), highly respected authors, find little to say about the subject. Hamner's (1988) review concludes much the same as does Florkowski and Schuster's review of profit-sharing. Hence, more federal support for research would be very desirable.

It may be questioned whether pay-for-knowledge systems can be applied within civil service systems that tend to operate in a very rigid fashion in order to maintain internal "equity." Similarly, we know little about the effectiveness of pay-for-knowledge, particularly when the rhetoric and hype are withdrawn. One issue that requires further thought and investigation is whether pay-for-knowledge is applicable to blue collar factory settings where it is primarily being used, or whether there is an application for it into white collar and professional jobs. In many organizations, compensation systems for more long service white collar and professional employees, have lost their motivating power as these employees pass the mid-point in the pay range and have seen their career advancement possibilities diminish. This, combined with a flattening of organizations, thus producing even fewer promotion opportunities, has created an early sunset on many careers. Employees experience little, if any, further advancement in compensation. At the same time, the scaling back of organizational headcount has left the remaining "survivors" with more work and responsibility. Whether pay-for-knowledge could provide a low cost solution to this dilemma is anyone's guess, but it may be worth further consideration.

Another policy question worth noting is whether employees earn more under pay-for-knowledge plans than would otherwise be the case under conventional pay systems. Additionally, the question of pay-for-knowledge and comparable worth, needs further consideration. A federal role (with private foundation support) in continuing research in this area would be very useful.

A critical issue is whether gainsharing and profit-sharing bonuses should be given tax advantaged treatment. One proposal (S. 932) would provide favorable tax treatment for gainsharing and cash distribution profit-sharing monies by making them nontaxable income (Congressional Record, 1987).

This author suggests that such a policy is unnecessary and would undermine the effectiveness of these plans in practice rather than enhance them. First, we do not know enough about the success/failure of gainsharing and profit-sharing to warrant a federal intervention at this time. What we do know, however, suggests a fifty year history of success with the use of these concepts in the absence of creating tax leveraging. Second, the research on this subject strongly suggests that management commitment is critical to the success of a gainsharing plan. One might reasonably ask how much management commitment would there be if the primary motivation for a plan was tax-oriented, rather than being driven by a desire for a change in the style of management and culture of the organization.

In addition, since employee involvement seems to be strongly related to plan success, it might be questioned how much employee involvement there would be if the plans were introduced solely on the basis of providing tax advantaged income to employees. The British experience of the 1970's should be insightful. There the government attempted to encourage productivity based pay increases as part of its pay control policy. Many companies installed plans "related to productivity" which paid out regardless of whether there was a favorable impact. In post-pay control interviews conducted by this author, British managers openly stated that their sole motivation was to provide pay adjustments in excess of stated guidelines and their attention to formulas was limited to insuring that they paid out regardless of the performance of the company.

In recent years, the British government has attempted to increase the use of profit-sharing schemes through tax leveraging. A recent survey of 30,000 British companies showed that 243 (less than 1 percent) profit-sharing plans had been registered with the government, with 146 being approved (BNA, 1988b). It was also reported that major employers including Boots and British Airways had done away with their plans.

Another regulatory issue of some concern to employers is the impact of gainsharing bonus monies on the calculation of overtime earnings. Historically, nondiscretionary bonuses have been included in the employee's regular rate for the calculation of overtime. This was very important when most of these bonuses were from piecework incentive systems in which many employees were leveraged as much as 30-100 percent of their base pay. Gainsharing bonuses tend to be in the 5-10 percent range.

The problem lies in that many companies would like to distribute gainsharing bonuses monies equally to all employees, that is provide "equal shares." This provides lower level employees with more of the gains, but more importantly reinforces the cultural issues of teamwork, cooperation, no barriers between office and factory, etc. In essence, a "we're all in this together approach." When companies pay their bonuses in this manner, it creates an administrative problem in that they fall outside of compliance with the Fair Labor Standards Act (FLSA). Administratively, they must then go back and recalculate the employees regular rate and provide each employee with a small check to balance their compliance with the FLSA. Many employers decide to avoid this problem by paying their bonuses in equal percents, thus avoiding the problem, but also not being able to use the bonus to make a statement concerning the direction of the organization. It is arguable that the FLSA was not designed to apply to such situations and a re-examination of this issue by the Department of Labor would be desirable.

Certainly, a potential role for policy-makers would be in the dissemination of information concerning gainsharing, profit-sharing, and pay-for-knowledge. Sponsoring conferences, circulation of case studies, providing information on resources available to parties interested in gainsharing, would be a useful service. Many companies and unions seek to identify other companies with plans that they may visit to gather first hand experience. A federal listing would not only assist these parties, but would also aid in research by identifying locations for study. Such a list should include both successful as well as unsuccessful experiences.

There is also a training opportunity. Many federal and state mediators encounter collective bargaining situations which would be very well served by consideration of an innovative form of compensation. If these individuals were better trained to discuss these issues with the appropriate labor and management leaders, collective bargaining would be well served.

It would be desirable to enhance the monies that are available to support area-wide labor-management committees such as the Buffalo-Erie County Labor-Management Council. These organizations provide considerable information and expertise to firms and unions in their communities. They provide an excellent delivery system for this information and assistance.

There is a need to recognize that pay freezes and pay reductions along with continuous use of lump sum payments to employees, and two-tier wage systems, combined with associated reductions in fringe benefits, threaten to reduce employees standard's of living to an unacceptable level. Recent BNA data for 1987 show that in contracts with lump sum payment, "median wage adjustments amounted to a freeze in the first year," followed by 1.8 percent and 2.0 percent, in the second and third year, respectively. In the first part of the 20th century, an issue of the "living wage" was one that attracted the interest of policy makers. There have been many concession situations in recent years, combined with pay freezes (with or without lump sum increases) that have undermined employee economic security.

There is no shortage of evidence that competitive conditions may require companies and unions to approach wage decisions in a very cost conscious manner and historical methods of pay delivery, such as through Cost-of-Living adjustments, may have caused the structural compensation problem in a firm or industry that must now be addressed. However, it must be recognized that there is nothing particularly innovative about reducing employees wages, and in turn their standard of living. The Labor Department should closely monitor this trend as its long term implications would not be very desirable.

NOTES

1. The American Productivity Center survey involved questionnaires mailed to 11,000 compensation professions in 4500 locations and organizations through membership lists provided by the American Productivity Center, the American Compensation Association, and through companies known to have gainsharing plans.

There were 1598 respondents including 741 in goods producing, 741 in service providing, and 116 in government installations. The survey allowed multiple locations within the same, but only 1 response per location was permitted. The 1598 organizations employed over nine million people.

The survey is generally unrepresentative in several ways. Generally, it was composed of larger, who were thought to be more innovative, organizations because of their connection with the APC and related factors. The goods producing sector composed 41.1 percent of the responding firms for more than its share of the overall economy. Response procedures also understate the results since a compensation manager responding for multi-plant locations would be treated as one response.

REFERENCES

Best, R. " Profit Sharing and Motivation for Productivity." In A Symposium on Profit Sharing and Productivity Motivation. Madison, Wis.: Center for Productivity Motivation, 1961, 47-51.

Blanchflower, D.G., & Oswald, A.J. Profit-sharing--Can It Work? (Discussion Paper No. 255). London: Centre for Labour Economics, London School of Economics, 1986.

Brower, F.B. Sharing Profits With Employees (Studies in Personnel Policy NO. 162). New York: National Industrial Conference Board, 1957.

Bullock, R.J., & Lawler, E.E., III. Gainsharing: A Few Questions, and Fewer Answers. Human Resource Management, 23(1984): 23-40.

Bureau of National Affairs. Changing Pay Practices: New Developments in Employee Compensation. Washington, D.C., 1988a.

Bureau of National Affairs. "Few Major British Employers Favor Profit-related Pay Plans." Current Developments, No. 12, January 20, 1988.

Colletti, J., Jr. Profit Sharing and Employee Attitudes. Madison, Wis.: Center for the Study of Productivity Motivation, 1969.

Congressional Record. April 7, 133(57), 1987, S4736-S4737.

Cummings T.C., and Molloy, G.E. Improving Productivity and the Quality of Work Life. New York: Praeger, 1977.

Doyle, R.J. Gainsharing and Productivity: A Guide to Planning, Implementation, and Development. New York: AMACOM., 1983.

Driscoll, J.W. "Working Creatively with a Union: Lessons from the Scanlon Plan." Organizational Dynamics, 8(1979): 61-80.

Ehrenberg, R.G., & Milkovich, G.T. "Compensation and Firm Performance." In Human Resources and the Performance of the Firm. Madison, Wis.: Industrial Relations Research Association, 1987.

Estrin, S. & Wilson, N. The Micro-economic Effects of Profit Sharing: The British Experience (Discussion Paper No. 247). London: Centre for Labour Economics, London School of Economics, 1986.

Fitzroy, F., & Kraft, K. "Profitability and Profit Sharing." Journal of Industrial Economics 35(1986): 113-130.

Flippo, E.B. Profit Sharing in American Business. Columbus, Ohio: Ohio State University, 1954.

Florkowski, G.W. "The Organizational Impact of Profit Sharing." Academy of Management Review, 12(1987): 624-636.

Florkowski, G.W. The Organizational Impact of Profit Sharing. Unpublished doctoral dissertation, Syracuse University, 1989.

Florkowski, G.W. and Schuster, M. "Support for Profit Sharing and Organizational Commitment: A Path Analysis." University of Pittsburgh (unpublished manuscript), 1989.

Frost, C.F., Wakely, J.H., and Ruh, R.H. The Scanlon Plan for Organization Development: Identity, Participation, and Equity. East Lansing, MI: Michigan State University Press, 1974.

Geare, A.J. "Productivity from Scanlon-type Plans." Academy of Management Review, 1(1976): 99-108.

Gilman, N.P. Profit Sharing Between Employer and Employee. New York: Houghton, Mifflin & Co., 1889.

Golden, C. "A Tribute to Joseph N. Scanlon." In Lesieur, F. (Ed.). The Scanlon Plan: A Frontier in Labor Management Cooperation. Cambridge: M.I.T. Press, 1958.

Goodman, P.S., & Graham-Moore, B.E. "Factors Affecting Acquisition of Beliefs about a New Reward System." Human Relations, 29(1976): 571-588.

Graham-Moore, B.E., & Ross, T.L. Productivity Gainsharing: How Employee Incentive Programs Can Improve Business Performance. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1983.

Gupta, N. Jenkins, G.D., Jr., & Curington, W.P. "Paying for Knowledge: Myths and Realities." National Productivity Review, 5(1986): 107-123.

Hackman, J.R. and Oldham, G.R. "Development of the Job Diagnostic Survey." Journal of Applied Psychology. 60(1975): 159-170.

Hamner, T.H. "New Developments in Profit Sharing, Gainsharing, and Employee Ownership." In J.P. Campbell and R.J. Campbell, Productivity in Organizations, San Francisco: Jossey-Bass, 1988.

Helburn, I.E. An Analysis of the Industrial Relations Climate in Unionized Profit-sharing Firms. Unpublished doctoral dissertation, University of Wisconsin, 1966.

Howard, B.B. A Study of the Financial Significance of Profit Sharing, 1958-1977. Chicago, Ill.: Profit Sharing Council of America, 1979.

Howard, B.B., & Dietz, P.O. A Study of the Financial Significance of Profit Sharing. Chicago, Ill.: Council of Profit Sharing Industries, 1969.

Jacoby, S.M., & Mitchell, D.J.B. "Management Attitudes Toward Two-Tier Pay Plans." Journal of Labor Research, 3 (Summer 1986): 221-237.

Jehring, J.J., & Metzger, B.L. The Stockholder and Employee Profit-Sharing In Large Department Store Chains. Evanston, Ill.: Profit Sharing Research Foundation, 1960.

Jenkins, G. D., Jr., & Gupta, N. "The Payoffs of Paying for Knowledge." National Productivity Review, 4(1985): 121-130.

Katz, D. & Kahn, R.L. The Social Psychology of Organization. New York: John Wiley & Sons, 1966.

Lawler, E.E., III. Gainsharing Theory and Research: Findings and Future Directions. Working paper T 85-1 (67). Los Angeles: Center for Effective Organizations at the School of Business Administration, University of Southern California, 1985

Lawler, E.E., III. High-Involvement Management. San Francisco: Jossey-Bass, 1986.

Lawler, E.E., & Ledford, G. E., Jr. Skill-based pay (Working Paper No. 8) University of Southern California, Center for Effective Organizations, 1984.

Majerus, R.E. "Workers Have a Right to a Share of Profits." Harvard Business Review, 62 (1984), 42-50.

McKersie, R.B. "The Promise of Gainsharing." ILR Review, (Fall 1986): 7-11.

Metzger, B.L. Profit sharing in 38 Large Companies: Piece of the Action for 1,000,000 participants, Vol. I. Evanston, Ill.: Profit Sharing Research Foundation, 1975.

Metzger, B.L. Profit sharing in 38 Large Companies: Piece of the Action for 1,000,000 participants, Vol. II. Evanston, Ill.: Profit Sharing Research Foundation, 1978.

Metzger, B.L. & Colletti, J. A. Does Profit Sharing Pay? Evanston, Ill. Profit Sharing Research Foundation, 1971.

Miller C.S., & Schuster, M. "A Comparative Analysis of Six Gainsharing Plans." Organization Dynamics, (Summer 1987): 44-67.

Mitchell, D. "Gainsharing: An Anti-inflation Reform." Challenge, (July-August 1982): 28-25.

Mohrman, A.M., Jr., Ledford, G.E., and Demming, S. Gainsharing: Congruence with high-involvement organization design. Working paper G 87-10 (101). Los Angeles: Center for Effective Organizations at the School of Business Administration, University of Southern California, 1987.

New York Stock Exchange. People and Productivity: A Challenge to Corporate America. New York: New York Stock Exchange, Inc. 1980.

Nightingale, D.V. Does Profit Sharing Really Make A Difference? Ottawa: Conference Board in Canada, 1980.

O'Dell, C. Gainsharing: Involvement, Incentive, and Productivity. New York: American Management Association, 1981.

O'Dell, C. People, Performance, and Pay. Houston: American Productivity Center, 1987.

Ruh, R.A., Johnson, R.G., & Scotrino, M.P. "The Scanlon Plan: Participation in Decision Making and Job Attitudes." Journal of Industrial and Organizational Psychology, 1 (1973): 36-45.

Schuster, M. "Gainsharing: Do It Right The First Time." Sloan Management Review, (Winter 1987): 17-25.

Schuster, M. "The Impact of Union-management Cooperation." Industrial and Labor Relations Review, 36 (1983): 415-430.

Schuster, M. "The Scanlon Plan: A Longitudinal Analysis." The Journal of Behavioral Science, 20 (1984a): 23-38.

Schuster, M. Union-Management Cooperation: Structure, Process, and Impact. Kalamazoo, Mi.: The W.E. Upjohn Institute, 1984b.

United States Department of Labor. Exploratory Investigations of Pay-for-Knowledge Systems, BLMR 108, Washington, D.C.: Superintendent of Documents, 1988.

United States General Accounting Office. Productivity sharing programs: Can They Contribute to Productivity Improvement. Washington, D.C.: Superintendent of Documents, 1981.

Walton, R.E. "From Control to Commitment in the Work Place." Harvard Business Review 63(March-April 1985), 57-74.

Weitzman, M.L. "The Simple Macroeconomics of Profit-sharing." American Economic Review, 75 (1985), 937-953.

White, J.K. "The Scanlon Plan: Causes and Correlates of Success." Academy of Management Journal, 22(1979): 292-312.

Zalusky, J.L. "Labor's Collective Bargaining Experience with Gainsharing and Profit-Sharing." Thirty-ninth Annual Meeting of the Industrial Relations Research Association, 1987: 174-182.

34. EMPLOYEE OWNERSHIP PLANS

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34. EMPLOYEE OWNERSHIP PLANS

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The idea that employees of an enterprise who are not managers should have an ownership stake in their firms is not a new one in the U.S. Neither is the current practice strictly a product of new incentives which have dramatically stimulated employee ownership since the passage of the Employee Retirement Income Security Act (ERISA) in 1974. In this paper, a brief history of the employee ownership idea and its practice in the U.S. are presented along with a discussion of the presumed implications of having non-managerial workers become owners in their places of work. Theorists as well as managers have hypothesized positive effects of ownership for the individual, the firm and the nation as a whole.

After reviewing research concerning the effects of employee ownership, an evaluation will be made of the effectiveness of these organizational forms in achieving economic, social and political goals. There are several apparent problems with the current legislation and practice regarding employee ownership which might be changed in order to achieve unrealized but desired benefits. These changes are presented as a series of policy recommendations aimed at creating more equitable and simple administration of employee ownership plans, gathering the data which are really needed to assess the benefits and costs of Employee Stock Ownership Plans (ESOPs), providing information and assistance to firms interested in employee ownership, and increasing the likelihood of obtaining improved economic performance and labor relations outcomes through the use of employee ownership plans in conjunction with worker participation in decision making.

A SHORT AND NOT SO GLORIOUS HISTORY

The first U.S. factory organized by producers on the basis of each person owning a single share and participating equally in firm decision making was among shoemakers in Baltimore in 1794 (Curl, 1980). Producer cooperatives were often formed by crafts workers seeking to maintain the autonomy and status of skilled craftsmen in the face of industrialization; through cooperatives, craft workers resisted the discipline and lost status which accompanied factory work (Shirom, 1972). However, a substantial number of cooperatives were designed explicitly as temporary organizations during labor-management conflicts. They were used as strategic tools to pressure employers into granting higher wages as factory production grew more prominent in the economy.

The temporary nature of some cooperatives and the ideological overtones of some few others (Grossman, 1943) led many analysts to view the cooperative form of production organization as unstable (Webb and Webb, 1920). In fact, cooperative forms of productive enterprise were organized as a result of general economic conditions and were often efficient forms of production for the circumstances of the time (Jones, 1977). These forms also created self control and autonomy for worker owners who collectively made decisions concerning the organization of work, compensation and firm policy (e.g., Jackall and Levin, 1984; Russell, 1985).

The first real plans through which employees came to own stock in their employing company appeared in the 1920's. By 1927 some 400 large corporations had these plans which usually provided for discounted buying of stock or low interest loans to employees to facilitate purchase of employers' stock. Some corporations such as National Cash Register, General Motors and Eastman Kodak provided the stock as an employee benefit without charge (Stern and Comstock, 1978). A particularly important aspect of these plans was that their use by non-managerial employees was apparently higher (estimated at 31 percent) than among managers (estimated at 8 percent) though managers held far greater numbers of shares on average (National Industrial Conference Board, 1928) because the plans were based on compensation levels just as many ESOPs are now.

The first theories discussing the effects of employee ownership of employer stock also appeared at that time. Employee stock ownership was posited to improve morale and productivity because employee owners would receive both short run returns in dividends and long run returns in increased value of stock. Adversarial labor relations were thought to decline because the different interests of workers and owners would become blurred. Workers would be participating in the capital formation process making their jobs more secure and integrating them into the economic system. Firm stock was thought to tie employee owners to the employer thus reducing turnover. Finally some managers saw the plans as a way to create an in-house market for stock (Foerster and Dietel, 1926).

Unfortunately, an assessment of these effects was not really possible because of the Great Depression. Between 1926 and 1932 over 60 percent of the plans were terminated (Davis, 1933). One study which was done in 1928 (NICB) concluded that the amount of money workers accumulated from the plans was too small to change work behavior. There was no visible incentive to increase output. Much of this difficulty was attributed to the length of time it took for stock to produce visible returns. Labor relations benefits were also impossible to assess adequately because the depression inflicted heavy losses on workers who had invested in stock. When the workers needed to draw on savings because of economic conditions, their stock was of course, concomitantly, worth much less than expected.

Most interesting for present concerns about employee ownership is that the presumed benefits and risks of current systems are the same. Managers and analysts expect higher productivity, better labor relations, less turnover and a greater appreciation from workers of the exigencies of firms operating in the marketplace. A recent public opinion poll (August, 1987) found that over 70 percent of a random sample of 1,000 Americans believed that people who work for an employee owned company, work harder, pay more attention to the quality of their work and are more concerned about the financial performance of the company than those working in companies not owned by their employees (NCEO, Sept./Oct., 1987).

The first successors to the plans of the 1920's were stock option and employee stock purchase plans which appeared in the 1950's and 1960's. However, stock option plans primarily benefited highly compensated executives and several studies concluded that there was nothing motivational about providing stock options (Foster, 1973). The size of non-managerial employee holdings through purchase plans was again too limited both in breadth of participation and in size to be viewed as a force for changing behavior.

Though practical experience with earlier attempts at employee ownership of stock neither produced widespread holdings nor enough research to evaluate its effectiveness in improving firm performance or individual welfare and motivation, a number or analysts have argued that employee ownership is both an equitable and practical form for the U.S. economy. In a well argued book on the political and economic system, the prominent political scientist Robert Dahl makes what is essentially the main argument involving equity and the U.S. social system. Simply put, the egalitarian political system which so maintains our society as stable and participatory should be extended to economic enterprises as well. Members of firms, just as citizens of the society, should have a right to participate in the decision making of economic enterprises (Dahl, 1985).

Though his argument actually is elaborated much further, its implication is presumably the disruption of the legal structure of private property. However, this primae facia conflict with property rights only exists in the circumstance where the employees (i.e., citizens) of the organization are not also its owners. In theory, employee ownership should be accompanied by the same rights which ordinary shareholders possess through their ownership of stock. Social justice, equity and democracy are the philosophical foundations upon which worker ownership of enterprise is proposed.

However, far more pragmatic arguments are commonly made for employee ownership. Louis Kelso's position has been that including all employees in the ownership of capital and their resulting participation in the rewards of the economy as both employees and owners, will enhance firm performance and simultaneously reduce inflationary and market distorting demands for ever increasing wages. Workers who receive income as stockholders will not be solely reliant on wage income. They will presumably work harder to increase their wealth and income through the shares they hold, and the necessity of constantly increasing wages will be reduced (Kelso and Adler, 1958; Kelso and Kelso, 1986).

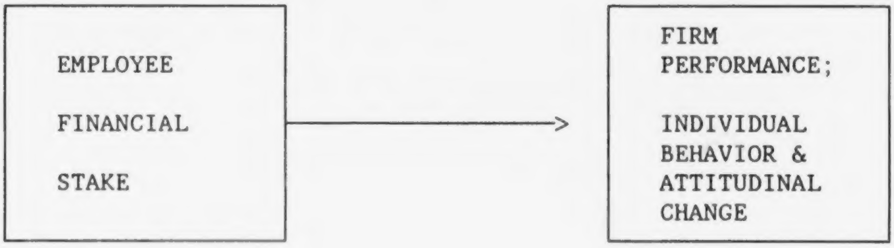
The Honorable Senator Russell Long translated such arguments in more "down to earth," applied terms. If employees have a financial stake in capitalist production, they will worker smarter, have a better quality of working life and the U.S. economy will become more competitive in the world market. In helping enact 19 pieces of legislation promoting employee ownership while on the Senate Finance Committee, he continually asserted that "Employee owners typically become more motivated and more dedicated. Work quality and workplace creativity increase, productivity and competitiveness improve; absenteeism and turnover decline" (BNA, 1987).

Many economic, sociological and psychological researchers have been more reserved about these presumed benefits. They have not only sought to empirically determine the effects of employee ownership on individual and firm performance, but have also posed a somewhat modified explanation as to why there should be any effects of employee ownership in the first place.

ALTERNATIVE CONCEPTIONS OF EMPLOYEE OWNERSHIP

The managers and analysts of the 1920's, 50's, 60's and advocates such as Kelso seem to be suggesting that the creation of a financial stake (albeit a large enough one) for non-managerial employees will in itself create increased commitment to job and firm, resulting in changed worker behavior. In other words, the financial participation in capitalism alone is thought to produce the positive practical outcomes of employee ownership. Figure 1 illustrates this theory which proposes a direct linkage between financial stake and expected outcomes.

FIGURE 1: FINANCIAL EFFECTS MODEL



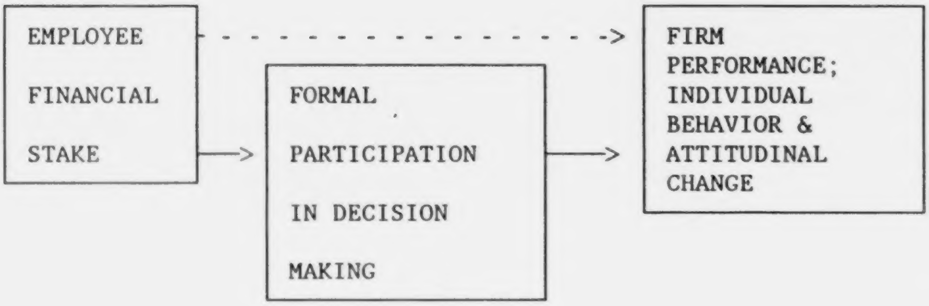
Some evidence supporting parts of this model has appeared. For example, Rosen et al. (1985) find a relationship between the size of the company contribution to the ESOP and satisfaction with the ESOP, organizational commitment, job satisfaction and intention to leave the company. These strong effects were not attributable to other characteristics of the ESOP or the firm. However, the actual size of the ownership stake in terms of the proportion of the company owned by employees did not produce statistically significant relationships with employee attitudes. Financial contribution, but not the ownership stake itself seemed to matter in this study. These results, the history of employee ownership, and psychological and social theory suggests an alternative mechanism for the creation of most positive outcomes.

In producer cooperatives the individual owners share in the responsibility for making decisions about the organization of work and the firm. They see themselves as entrepreneurs who have acted collectively to accumulate sufficient capital to run an enterprise. Behaving as entrepreneurs means making economic decisions about the firm, and sharing in the resulting risks and benefits. In employee ownership cases involving employee buyouts of factories, Whyte (1984) and his colleagues found that workers shifted their views of social justice and their expectations about participation in firm decision making. They expected to exert more influence as owners over the operations of the firm (e.g., Hammer and Stern, 1980). Numerous studies have found that workers expect to participate more in decision making though they tend to want such opportunities for participation to focus on the work process rather than broad firm policy and investment (see Levine and Strauss, Paper #35a). These workers often see work process issues as more germane to their daily lives and simultaneously doubt their ability to make managerial decisions regarding finance, investment and marketing.

Participation with ownership gives workers the opportunity to make their work more meaningful with the resulting positive benefits to productivity, commitment and work behavior. Changed expectations without the opportunity for participation may create conflicts over the right to participate. The worker buyout cases at South Bend Lathe and Hyatt-Clark illustrate the conflict which may result. The participation plans at Weirton Steel and a variety of other sites (Quarry et al., 1986), show the importance of the alternative view.

Regardless of the exact expectations over the form which participation should take, the research and theory suggest that the positive effects of employee ownership function through the accompanying process of worker participation in decision making. When participation is not included, the expected positive outcomes will be diminished if not eliminated all together. Figure 2 illustrates this theoretical perspective. The effects of financial stake are mediated by the

FIGURE 2: PARTICIPATORY EFFECTS MODEL


EMPLOYEE FINANCIAL STAKE
FORMAL PARTICIPATION IN DECISION MAKING
FIRM PERFORMANCE; INDIVIDUAL BEHAVIOR & ATTITUDINAL CHANGE

extent of participation in decision making. The theory however, does not imply that participation without ownership is sufficient to generate sustained positive outcomes. Its effectiveness is dependent on the changing expectations and financial stake of individuals through ownership. Many worker participation plans show short term effects which fade (see again Levine and Strauss, Paper 35a). Among the problems is the demand that workers exert extra effort in participation without additional compensation. Participation may become an expansion of job definition, a kind of work "speed-up." Often workers expend energy on participation only to find that their opinions are not listened to and group suggestions are not implemented. Some worker participation is severely constrained in terms of the subjects over which participation takes place. Entrepreneurs, investing in an enterprise, exerting control over its actions and benefiting from improved performance sustain their own interest and efforts over a much longer span. Research evidence on the effects of employee ownership plans must be evaluated with respect to these alternative conceptions.

FORMS OF EMPLOYEE OWNERSHIP

Employee ownership of corporate stock generally takes place in two forms: stock held in trust and direct ownership of shares. The most prominent of these is stock held in a trust for the benefit of employees. The primary forms are pension funds and ESOPs. (As pension fund stock is not thought to significantly affect the performance of work, and pensions are covered in papers #32 and #39, the focus here is upon ESOPs.) The General Accounting Office (GAO) estimates that in March 1986 there were approximately 4800 ESOPs active in the U.S. There were an additional 2,400 non-ESOP stock bonus plans which may be viewed as similar to the form of ESOP which does not involve leveraging or tax credits. In early 1989, the National Center for Employee Ownership (NCEO) estimated that approximately 10,000 such plans now exist and cover 10 million workers. With 1983 Internal Revenue Service (IRS) data, the GAO reported over 7 million employees participating in ESOPs with total plan assets of about $18.7 billion. Median assets per participant were estimated at $5,226 though the distribution of participant assets across types of ESOPs are very different (GAO, 1986).

ESOPs are enormously flexible in terms of financial structure and administrative rules. They are roughly classifiable into four types, the most numerically dominant of which is the tax credit ESOP often called TRASOP or PAYSOP. These were established by using tax code provisions which permitted credits for capital investments and later for a percentage of total payroll so long as the credited amount was used to make contributions to an ESOP. This credit represented the primary form in which the Federal government subsidized the formation of employee ownership through ESOPs. The GAO report estimates that 26 percent of the 1983 plans were of this form, but these covered 90 percent of participants and represented 90 percent or more of the foregone tax revenue associated with ESOPs. The report estimates approximately $11.8 billion in lost revenue over the 1977-83 period for tax credit ESOPs. Some studies indicate that 50-60 percent of Fortune 1000 companies have established tax credit ESOPs (Blasi, 1987). This type of ESOP has had the lowest per worker account balance of the general types and was associated with the fewest opportunities for worker participation in decision making. However, these credits were ended in 1986, and the effect on maintenance and establishment of ESOPs was uncertain until recently when a number of large public corporations established plans of the leveraged type.

The other forms of ESOPs fall directly under ERISA and consist of leveraged plans, plans which are not leveraged but are structured so they could be and those which are strictly used as employee benefits. The first two types permit the use of employee ownership as a device for raising capital in a relatively inexpensive fashion. A corporation may set up a trust which borrows funds and uses them to purchase stock from the firm. Thus, the employer receives loan proceeds in exchange for shares which are held in a trust ordinarily controlled by management and the lending institution.

Such ESOPs are encouraged first by the tax code which permits the employer to repay the loan through the trust and deduct both the principal (up to an amount equal to 25 percent of compensation) and interest (without limit) as fringe benefit costs. Second, the commercial lenders are permitted to deduct 50 percent of the interest they earn on ESOP loans. The practice has been to reduce loan interest rates somewhat encouraging both corporate establishment of ESOPs and lender interest in making loans for the purchase of employer stock. Third, corporations are permitted to deduct the value of dividends paid on ESOP shares if the funds are used to repay the loan or are distributed in cash to employee shareholders. Fourth, owners of corporations wishing to reduce their holdings may sell shares to employees through an ESOP and may roll over tax obligations by reinvesting the proceeds of the sale in other securities. This facilitates the transfer of ownership of private firms from founding entrepreneurs and their families to employees and is an opportunity for estate management with business continuity.

Commercial loans to ESOPs in 1987 were estimated at $5.5 billion with over $3 billion of it going to establish the Avis and Health Trust ESOPs (NCEO, 1988). Leveraged ESOP loans totaled $6.5 billion in 1988 with 50 of the loans amounting to more than $10 million each. Public corporation ESOPs were most prevalent in this group. In January 1989, Proctor and Gamble borrowed $1 billion for establishment of a leveraged ESOP (NCEO, 1989).

This form of ESOP covers only about 6 percent of plan participants, but is more likely than other forms to be used for buyouts of failing companies and by founding entrepreneurs who wish to retire or reduce their financial stake in their firm. Leveraged plans can acquire large ownership shares more quickly than non-leveraged plans. The GAO placed the tax revenue loss for this type and the nonleveraged form at between $.2 and $1.5 billion annually (GAO, 1986). The wide range represents the reasonable possibility that firms could obtain similar tax advantages by using mechanisms other than the ESOP form.

The nonleveraged form, similar to a stock bonus plan, simply gives stock to employees through trust accounts as a benefit. Here, employers may contribute up to 15 percent of compensation to the plan or 25 percent if there are carryovers from previous years. Approximately 3 percent of participants are covered by this form (GAO, 1986) which grants a tax deduction for the corporation only for the cost of the employee benefit itself.

Analysts of ESOP legislation and administration also argue that it is important to separate the discussion of ESOPs in public and private corporations. Public firms have largely used the tax credit form in the past, and they are subject to different rules of administration. For example, public companies must pass through the voting rights on allocated shares of stock to the employees for whom it is being held. Private firms need not do this except on major decisions including merger, consolidation, sales of substantial corporate assets, recapitalizations, reclassifications, liquidations and dissolution when the plan itself has 10 percent or more of its holdings in employer stock. Thus, the nature of participation by employee owners in public and private firms may be very different.

The termination of the tax credit ESOP form through the 1986 Tax Reform Act was anticipated as a disincentive for public firms to invest in ESOPs. However, the data for 1988 and early 1989 show that if anything, the number and size of plans in public firms is increasing. One reason is the ability of firms to deduct the amount of dividends paid on shares if the proceeds are used to repay the ESOP loan. Thus, companies have been able to place preferred convertible shares of stock with relatively high dividend rates in the trust. The result is the substitution of a deductible expense for a non deductible one which both pays back the loan and provides an employee benefit. Further, companies have been able to use loan proceeds to purchase common shares from the market, thus bringing more shares under control of the firm.

The practice has also been accompanied in public firms with the explicit substitution of ESOP plans for other employee benefits. For example, a recent *Business Week* article reported on Boise Cascade, Ralston Purina and Whitman each deciding to eliminate post retirement medical plans and telling employees to use proceeds from their ESOP stock to purchase insurance. Polaroid workers obtained an ESOP but took a 5 percent wage cut and lost company contributions to a 401(k) savings plan (May 15, 1989:118-119). The issue of benefit substitution, addressed later, suggests the need for research explicitly aimed at determining what employees are giving up in exchange for ESOP stock.

Direct worker ownership of stock, as opposed to a trust or ESOP form, was used in some of the first few worker buyouts of factories scheduled for closure such as the Library Bureau in Herkimer, New York, Saratoga Knitting Mill in Saratoga Springs, New York and the Vermont Asbestos Mine in Lowell, Vermont. However, buyout cases represent a very small portion of the total number of firms with employee ownership. The National Center for Employee Ownership estimates such cases at only 1-2 percent of the total, and direct ownership in buyouts has been replaced largely by use of the leveraged ESOP form. The GAO survey of 3,700 ESOP firms finds 4 percent saying they used the ESOP to save a failing firm (1986).

On the other hand, direct ownership through producer cooperative arrangements remains a viable option for employee ownership. Under this form, all members of a firm own equal numbers of shares of stock (usually one share) and act jointly in making decisions for the firm. Alternative financial structures such as internal account maintenance are also used. The most successful group of cooperatives in the world, in the Mondragon region of Spain, uses this alternative method.

Historically, the number of producer cooperatives in the U.S. has been rather small (Aldrich and Stern, 1983), but prominent U.S. examples include plywood firms in the Pacific Northwest, taxicab companies, garbage collection and reforestation companies. Though the current number of producer cooperatives is estimated to be only a couple of hundred, they have been shown to have high levels of productivity, to pay higher wages than comparable non-cooperative firms in the industry and to produce a more satisfying, motivating work situation. The earnings which are returned to members are not a tax obligation for the firm and are taxed only as income to individual worker owners (avoiding the double taxation issue which dividend payments create except under the ESOP conditions discussed previously).

Cooperatives seem to be able to provide more jobs for a given level of capital than other firms. They have been shown to be at least as productive as comparable conventional firms and to require fewer supervisors to monitor work (Jones and Svejnar, 1982; Jackall and Levin, 1984; Russell, 1985; Gunn, 1984). However, they also tend to be smaller than the efficient scale of operations for numerous industries. As a result they often appear in the retail and service sectors. Further, cooperative forms of organization have suffered from insufficient levels of reinvestment in capital equipment due to incentives to maximize member short run income. Perhaps more important in describing their limitations, is their existence in an economic system which does not support them as an organizational form. Their incentives are not always consistent with current practices of conventional firms and they lack the supporting institutions which conventional firms can utilize (Aldrich and Stern, 1983).

CURRENT ISSUES

The current thrust of employee ownership is in the direction of the stock trust ownership form which merits primary attention here. Policies promoting employee ownership in the U.S. have sought to achieve two goals which have previously been difficult to promote simultaneously. One is to stimulate economic growth through enhanced firm performance and the other to promote social equity by broadening the distribution of the ownership of wealth (Quarry and Rosen, 1986). Such positions are visible in the legislative history of employee ownership beginning in 1974 with statements from numerous Senators and Representatives (Blasi, 1988). One oft cited statement supporting employee ownership came from former President Reagan, who argued that, "Our Founding Fathers well understood that concentrated power is the enemy of liberty and the rights of man...And since in any society social and political power flow from economic power, they saw that wealth and property would have to be widely distributed among the people of this country." (Reagan/ Bush Committee, 1980).

In pursuit of these goals, ESOP legislation was specifically drafted to seek to broaden the ownership of corporate stock, provide more funds for capital formation and to improve the performance of sponsoring firms (GAO, 1986). The evaluation of research on employee ownership which follows is structured to address current knowledge on these issues. The primary emphasis is on how employee ownership has affected firm performance, meaning productivity, profitability, employment levels and individual work behavior. Does it produce more satisfying jobs for American workers and do they feel an increased sense of participation? Has legislation been successful in broadening the distribution of wealth in the form of more widespread holding of corporate stock? Does employee ownership contribute to capital formation? At the same time, the creation of employee ownership through ESOPs has affected issues related to individual employee benefits and to shareholder rights. Policy must ultimately be concerned with these as well.

EVALUATING FIRM PERFORMANCE

The analysis of ESOP firm performance moved beyond simple case analysis after 1978. Over the past ten years substantial information has accumulated about firm performance regarding profitability, productivity and growth. The difficulty involved in reporting research results with confidence is that the studies have tended to be limited in crucial ways. One significant problem involves small sample sizes and sampling bias. Several studies used samples of firms that had been identified in the press, congressional hearings and reports of other researchers. When larger samples became available, studies faced the problem of responses gleaned from successful firms only or primarily from those willing to take the time to report on their plans. The likelihood of bias toward successful firms was high. In all cases, the brief period of time of operation of most ESOPs, has made evaluation of long run effects difficult.

Some researchers compared employee owned firms to industry averages; others drew matched samples of firms for comparison but were not always careful about matching by specific enough industrial categories. Only three studies have used a pre and post employee ownership plan analysis. These studies are more sophisticated than earlier work; the most recent one by the GAO and an analysis of publicly traded firms by Bloom (1985), inspired more confidence in the current state of knowledge. The 1986 study by Quarry and Rosen, sponsored by the National Center for Employee Ownership (NCEO), and a book by Rosen et al. (1985), provide greater insight into issues such as job satisfaction, the importance of how much stock is held and how much participation in decision making is involved.

Promoters of employee ownership enthusiastically received the 1978 study by Conte and Tannenbaum which reported that in a sample of thirty firms with some form of employee ownership, the ratio of pretax profits to sales was 50 percent higher than for conventional firms in the same industries. They also found that the higher the proportion of firm equity owned by workers, the greater the profitability. However, the 98 firm group from which the 30 responded was identified from media coverage, professional journals and colleagues; the comparison sample was drawn from available annual reports of public corporations. The results, though encouraging were not statistically significant.

In order to remedy the problems of sampling and reliability, a second study was undertaken which expanded the original 98 by 101 firms. A matched sample was drawn from Dun and Bradstreet and the same measure of profitability was used. This time no differences were found between the employee owned firms and the matched sample (Tannenbaum, Cook and Lohman, 1984).

One study matched eight ESOP with non-ESOP firms in the electronics industry. Although ESOP firms were found to have somewhat higher productivity (net sales per employee) and profitability (net profit/sales; net profit/capital; net profit/net worth; net sales/net worth) than the non-ESOP firms, no statistical significance of the differences could be shown (Hamilton, 1983). Another, a much publicized productivity study, argued that ESOP firms showed greater productivity growth than industry averages over the 1975-79 period. No significance statistics were reported and the response rate to the survey was only 7 percent (Marsh and McAllister, 1981). A similar pattern is repeated in several other studies. Employee owned firms are shown to have some greater productivity, profitability or growth (Rosen and Klein, 1983) than industry averages or a matched sample, but no statistical significance for the differences is shown. Blasi (1988) reports on 26 studies including those already mentioned which suggest that ESOPs improve firm performance. However, each of the studies is limited by the methodological problems which initially plagued this line of research.

Bloom (1985) studying tax credit ESOPs in public corporations carried out a study with adequate controls, a matched sample of firms and a before-after design. He found that ESOP firms did seem to have greater productivity, but was able to show that this was a result of more productive firms choosing ESOPs in the first place. Profitability advantages seem to be explained by other factors such as capital investment. He concluded that ESOP firms did not show improved performance because of ESOP plans, but his conclusion also shows that publicly traded ESOP firms do as well as others. Employee ownership did not hurt firm performance.

In 1986, the NCEO (Quarry and Rosen) reported on a matched sample, before and after study of 45 ESOP firms. Each firm was matched with five or more non-ESOP companies of approximately the same size within the same industry and geographic region. Firm performance was examined by comparing matched firms and ESOP companies in the period before the ESOP was established, in the period after establishment and the ESOP firms were compared to themselves in the before and after periods. Growth in employment and sales were examined. Firms provided information on management philosophy regarding employee ownership, use of tax advantages, size of contribution to the plan, employee participation in decision making, communications with employees about the plan and plan features. The study also evaluated the effects of changes in management, voting rights, board representation for workers, company size and worker attitudes about the plan.

Post ESOP performance was 6.5 percent higher in sales growth and 7.1 percent higher in employment growth for the ESOP companies. The study finds that two thirds of the ESOP companies did better than their matched comparison group or the two measures. The rates of growth actually increased substantially in the after ESOP period.

However, the most interesting findings appeared when an attempt was made to explain why such differences existed. Correlations with the other independent variables showed that the only consistent predictor of performance differences was the degree of formal worker participation in decision making in the firm. A management philosophy promoting employee ownership for reasons other than tax advantages was also related to performance improvements, but such philosophies were associated largely with the implementation of accompanying participation plans. In a multivariate analysis, no predictors other than employee participation through participation groups and employee perception of influence in decision making remained significant for all performance measures.

In an attempt to examine the effect of participation, the interaction between performance level and amount of participation was analyzed. It showed that those ESOP firms with very low levels of participation or no participation plans actually did worse on performance measures than the matched samples. Those firms with moderate or high levels of worker participation in decision making did much better than the matched samples in both the post plan period and in comparing the differences between pre and post plan performance. The data further show that positive employee attitudes concerning the ESOP are associated with better firm performance (Quarry and Rosen, 1986).

The stream of firm level performance research currently ends with the study released by the GAO (1987). Originally stimulated by a request from Senator Long to examine the tax and performance record of

ESOPs, the study used data from IRS files to examine matched pairs of ESOP and Non-ESOP firms before and after establishment of the plans. Samples were drawn of firms with plans established during periods from 1976-77 and 1978-79 and examined for two years before the plan and three years after its establishment.

Tests for after tax profitability effects revealed statistically nonsignificant differences except for the second year after plan establishment in 1976-77 firms, favoring the ESOPs. Other tests with nonsignificant effects favored non-ESOP firms in four out of five cases. Tests of productivity change using value added in a ratio with total costs again produced nonsignificant differences though the direction favored non-ESOP firms. That is, the evidence suggests that ESOP firms did no better and no worse than conventionally owned firms.

The GAO also attempted to examine the covariates of improved performance for the ESOP firms. A sample of 1,100 ESOP firms was surveyed in 1981, with a 77 percent response rate (GAO, 1987:12). The type of ESOP, existence of voting rights, assets per participant, percentage of the company owned by the ESOP, industry and increases in participation after establishment of the plan showed no relationship to improvement. Only the level of worker participation in decision making was related, producing a positive relationship to productivity performance.

The GAO survey also showed that participation levels had not changed in most firms after establishment of the ESOP. Twenty seven percent indicated some increase but among this group, three quarters indicated that the increased participation was informal rather than institutionally structured (1986:41). On the other hand, a 1983 New York Stock Exchange study found firms with ownership plans to be 25 percent more likely than others to have formal worker participation plans, and four times more likely to have a quality circle program. Research on participation in the absence of employee ownership shows that positive effects of participation on productivity have not been sustainable over long periods of time. Initial performance improvement tends to disappear after 6 months to two years (See again Levine and Strauss, Paper 35a). Participation coupled with ownership seems to be maintained over a longer period though no systematic studies have been attempted.

The ten year line of research on the firm level performance effects of employee ownership provides two critical conclusions.

1) Employee owned firms do as well as conventionally owned firms in productivity, profitability and employment growth and performance. (This finding is particularly important given the initial criticism that employee ownership was a desperation attempt temporarily to save failing firms.)

2) Performance superior to conventional firms may be shown when employee owned firms include formal participation in decision making along with the financial stake of ownership. (This finding is consistent with both the literature on participatory democracy and the position taken that the benefit of the stock itself may be so deferred and in such small amounts initially, that behavioral effects will not occur [U.S. President, 1985]). Participation makes the financial stake salient.

BEHAVIOR AT WORK

There is little doubt that managers expect and proponents hope for improved work behavior from employees under employee ownership. The GAO survey reported that 66 percent of firms including three quarters of the leveraged and tax credit ESOPs believed that employee ownership would produce increased employee morale. Thirty-six percent expected reduced employee turnover, and 14 percent decreased absenteeism. Another 8 percent indicated that the expected increase in the commitment of workers to the firm might help them avoid unionization.

Journalists, politicians and researchers have long argued that employee owners will "work smarter." They are expected to be more highly motivated, more committed to the firm and more likely to take actions designed to improve firm performance. Research on these issues however, has been less systematic than that examining overall firm performance. Much of it consists of anecdotal reports by journalists or researchers who happen to notice something interesting. With a few notable exceptions, the systematic studies have examined one or two firms rather than large samples. At the same time there is a certain consistency among the reports which suggests that attitudinal and behavioral changes exist.

The first systematic studies of attitudes and behavior focused upon cases of worker buyouts of factories. Some of these studies involved direct stock ownership cases and others ESOPs, but there appeared to be consistency among them. There was an initial burst of enthusiasm for the ownership plans including increased motivation, lower turnover, less material loss due to poor quality production and increased commitment to the firm (see for example, Whyte, 1979). This honeymoon period was followed by the disappearance of many of these effects and in some very prominent cases, dramatic increases in labor-management conflict.

Researchers looking at these cases generally found that worker expectations had changed as a result of ownership and the financial sacrifice which was often made in saving a plant. For the most part employee owners expected an increase in their influence in firm decision making. At the same time, there was a desire for increased management influence and skill (Hammer and Stern, 1980) as workers sought competent management to ensure the economic viability of the plant. The apparent contradiction is resolved by recognizing that non-managerial employees wanted to influence the work process and perhaps personnel decisions but not firm strategies on marketing or firm investment decisions.

Traditional managers however, often failed to recognize the change inherent in having shareholders working in non-managerial positions inside the firm. They often did not think about participation, and the turbulence of saving a firm through employee ownership, made recognition of the required change in management practice more difficult. These results again pointed to the necessity of implementing some form of worker participation plan which would acknowledge employees as owners.

Job satisfaction and firm commitment were also examined by a variety of case study researchers. Kruse (1984) reviewing some dozen studies summarizes the literature to that time. Support for increased job satisfaction due to ownership was simply not evident. The cases which found increased satisfaction often failed to control for other factors and those which did attempt multivariate analysis found that satisfaction was not a result of ownership. Some employee owners did indicate satisfaction with the idea that a financial gain through ownership was possible, but most felt no sense of ownership per se. Satisfaction levels between owners and non-owners within the same firm tended to be the same.

Kruse's own study of two ESOP firms finds no improvement in satisfaction due to the ESOP. Searching for an explanation for low satisfaction levels led him to find that thwarted expectations about being treated better and having more information about the firm were probably responsible.

Results regarding increased sense of individual commitment to an organization are far different. Here, though the evidence is somewhat mixed, the bulk of it shows that employee ownership is associated with increased feelings of commitment to the firm and decreased intention to leave. The two most thorough studies using control group comparisons are most interesting because they examine cooperatives rather than ESOPs. Both Russell's work on scavenger (garbage collection) coops (1985) and Rhodes' study of plywood coops (1978) find higher levels of commitment (and satisfaction) than for comparable conventional firms. Rhodes found that turnover and grievance rates were lower, though no differences were found in absenteeism, lateness or accidents. She found that the increased commitment level was closely associated with perceived participation in firm decision making. A much earlier study of these cooperatives had found a similar relationship (Bellas, 1972).

The most comprehensive study to date is that reported by Rosen et al. (1986) in which 2800 employees in 37 ESOP companies completed surveys on job satisfaction, organizational commitment and turnover intentions. These data were examined with regard to both firm and ESOP plan characteristics. A substantial majority of workers indicated that owning stock led them to feel more committed to the firm particularly for financial reasons. Two-thirds also indicated that they thought they would stay longer as a result of owning stock. However, less than 50 percent felt that they worked harder, enjoyed their work more or were more cooperative because of owning stock. Less than 30 percent felt that owning stock had increased their influence in firm decision making.

The study found that the positive effects on satisfaction, commitment and turnover were significantly related to a positive management philosophy about employee ownership (it wasn't just a financial tool or a fringe benefit) and to the size of the company contribution to the ESOP (as a percentage of wages). The proportion of company stock owned, voting rights and increased stock value were not related. Communication about the ESOP was associated with some decreased level of turnover intention. Firm characteristics were unrelated to these variables with the exception of the well documented negative relationship between turnover and unionization. An analysis controlling for firm and plan characteristics shows that 25-35 percent of the variance in these three attitudes was explained by company contribution and ownership philosophy.

An examination of perceived and desired worker influence in decision making in these firms showed that worker perceptions of influence were positively associated with satisfaction and commitment. Employee owners indicated that they wished to actively participate (at least have their opinions asked) about social events, work process and compensation. They were least satisfied with their level of participation regarding compensation and the hiring of managers and supervisors. Some interest in participating in company policy decisions was indicated, but the desire for participation largely focused on the work itself.

In a comparative case analysis of 15 firms overlapping with the Rosen et al. study, Quarry et al. (1986) used interviews and observation to discuss the effects of ownership. In the most successful of these firms they found attitudes and performance to be related to the implementation of some participatory mechanism along with ownership. The establishment of such mechanisms was largely a function of the views of top managers that employee ownership was central to the identity of the company and not simply a financing tool.

The other behavior thought to be related to employee ownership is absenteeism. Here, studies are sparse, but essentially reinforce earlier arguments. A detailed case study by Hammer et al. (1981) of an employee buyout examined absenteeism behavior both before and after the implementation of ownership. No changes in the overall level of absenteeism were found, but employees did shift their reasons for being absent from unexcused to excused categories. The change seemed to be related to a social or peer group pressure effect which has been identified in several studies.

An important second piece of research compared three pairs of stores involved in the creation of the O & O and Superfresh groceries in Philadelphia. These companies were created in a union initiated plan to prevent the closing of A & P stores. Under the plan, participation in decision making was to be implemented in the conventionally owned Superfresh stores and would be initially included in the O & O cooperatives (Hochner et al., 1988) Granrose et al. (1985), in early work on this study, compared worker and firm outcomes in the coop stores with two Superfresh stores with participation and two which had not started the participation plans at the time of the study. Absenteeism was significantly lower in the coop and conventional stores then in the conventional quality of worklife plan stores. Turnover was much lower in the coop than either of the other pairs. Among the conventional stores, the pair with participation alone had higher turnover than the traditionally run store. Though local circumstances may explain these findings, they are consistent with the idea that participation works best with ownership; it is harder to obtain and maintain effects of participation alone.

Large sample comparative studies of absenteeism in employee owned firms have not been carried out. The evidence so far suggests that there may not be much reduction in absenteeism as this behavior does not seem to be directly related to the financial stake involved in ownership of stock.

BROADENING HOLDINGS OF STOCK

The policy objective of broadening the holding of stock in the U.S. through employee ownership has been given considerable weight but relatively little attention. The rhetoric of many studies of ESOPs is that such an effect is inevitable as employee ownership plans spread and that the result will be a more equitable distribution of wealth and a more democratic society.

The concentration of wealth in the holding of corporate stock is apparent in a number of reports. The GAO study (1986) shows that only 19 percent of American families own stock either directly or through a mutual fund. The wealthiest 10 percent of households own 90 percent of corporate stock with the wealthiest .5 percent owning nearly 46 percent.

ESOPs and direct employee stock holding amounts to less than 1 percent of the ownership of corporate stock. However, among employees in such firms shareholding is widespread. The GAO reports that 71 percent of employees in ESOP companies own stock. That is, the structure of the plans naturally broadens the holding of stock. Obviously, all members of a cooperative own shares. Thus, employee ownership does meet the objective of redistributing wealth in terms of stock holding.

That employee ownership encompasses such a small proportion of the economy led the GAO report to conclude that the amount of redistribution attained through ESOP legislation has been rather expensive given the lost tax revenue. However, the largest tax subsidy, through the tax credit ESOP, has been eliminated. The Federal government provided a stimulus to permit experimentation demonstrating the effects of employee ownership. The remaining tax advantages are far less costly and they may be used to raise investment capital as well as to permit the continuation of firms whose founding owners wish to retire. The same tax benefits are available through other financial mechanisms, suggesting that the continued maintenance of current tax treatment is sensible. The cost is relatively low, substantial opportunities facilitating firm financing are provided, and the distribution of wealth is inevitably broadened. The difficulty is that this broadening will represent only a very small change unless employee ownership is implemented in a substantially larger number of firms and with somewhat larger holdings per participant. In addition, employee stock ownership through trusts has created other dilemmas.

INDIVIDUAL BENEFITS AND RISKS

ESOP stock is treated as an employee benefit with plans established under the jurisdiction of ERISA. A number of analysts have criticized the law regarding ESOPs because ERISA protections afforded workers regarding diversification and some prohibited transactions under other benefit plans are not enforced with regard to these plans. Most notable is that ESOPs are permitted to invest completely in employer securities which leaves the employees' stake dependent on the fortunes of a single company rather than a diversified portfolio. Should the stock represent the employee's entire retirement benefit, a potentially high risk situation is created. The worker becomes dependent on the corporation for both employment and retirement income. Regulations now permit those reaching age 55 with at least 10 years in the plan to direct diversification of 25 percent of account holdings deposited after 1986. However, this provision is very limited protection for plan participants. The value of stock which they may seek to diversify at age 55 is still based on the previous ESOP investment in the employer.

An ESOP also can engage in the normally prohibited transaction of acquiring stock from a "party in interest," in this case the employer or majority stockholders. This exemption permits the ESOP to use loan proceeds from the interested party to acquire stock. Without these exemptions, ESOPs could not function as now structured; many practical incentives for their establishment would be eliminated.

In addition to the possible imprudence of investing largely in employer securities, the fiduciaries who oversee the stock trusts may retain dual loyalties by being company officials or individuals hired by management. On occasion fiduciaries have been indemnified by insurance from corporate assets (Blasi, 1988). Protections of ERISA again have been structurally abridged.

The underlying point is that employees take extraordinary risk with ESOPs. If such benefits are being given in exchange for other benefits with less attached risk than more intense consideration must be given to the employment relationship plan members face. If many firms are acting in a pattern similar to that described in the Ralston Purina, Polaroid and other cases, then corporations are gaining substantially by reducing costs and placing risk on employees. A thorough assessment of the extent of trade-off among benefits types particularly regarding ESOPs becomes critical to evaluating this form of employee ownership. Should employees find themselves dependent on a firm's stock market performance for a substantial portion of future welfare, disruption in labor relations and individual performance seem likely. At a minimum, employees taking on such risk should be afforded some influence in firm decision making.

ESOP PARTICIPANTS AS SHAREHOLDERS

The benefits issue is intimately tied to the manner in which ESOP participants are treated as shareholders. Analysts have discussed this issue in terms of both shareholder rights and the administration of the stock trusts. Ordinary shareholders are entitled to information about the company and its finances and have the ability to vote common and other certain classes of stock. Employee owners are treated differently than ordinary shareholders; they do not receive these same rights and protections regarding information disclosure which are afforded others by the Securities and Exchange Commission.

The problem is compounded by the treatment of workers in voting shares of stock. The financial benefit of ownership can be separated from the rights of control offered investors in ordinary corporate securities. The funds used and/or borrowed to establish the ESOP are part of the company's operating capital. An ordinary investor has a right to know if not make a decision about such a transaction. Plan actions may result in the dilution of stock value or the sale of a company.

A central dilemma of the voting question hinges on the management of allocated and unallocated shares within the trust. Allocated shares may be voted by trustees according to the instructions of participants so long as the participants make an independent judgement free of employer influence. Plan documents should specify procedures for directing trustees and procedural prudence must be observed (BNA, 1987).

The voting of unallocated shares is particularly crucial in the case of acquisition attempts where trustees must determine the tendering of shares in the face of an offer. In highly leveraged ESOPs, the majority of shares held by the trust will not have been allocated to accounts because such an allocation occurs only as the ESOP loan is repaid. Unfortunately, the situation regarding voting or tendering of unallocated shares remains unclear. In February, 1989, the Department of Labor opinion regarding Polaroid indicated that trustees must vote unallocated shares independently. Trustees are advised to act in the long term interest of plan participants as participants and not as employees (NCEO March/April, 1989). Should trustees vote unallocated shares in the same proportion as instructed by plan participants' regarding allocated shares or should the interests of future participants and stock which will be allocated to current participants be subject to a completely independent judgement by the trustees? Though the issues over which employee owners must have voting rights are more restricted in private firms, the voting rights question is general to both public and private cases.

The psychology underlying this situation is apparently one in which the ESOP stock is seen as a gift or purely an employee benefit; the worker owners are not treated as investors or given ordinary shareholders' rights. Managers see the plans as containing shares which may be controlled strategically as in the defense Polaroid mounted against the acquisition attempt by Shamrock Holdings. This situation makes the broadening of wealth through stock distribution objective somewhat problematic. Employee owners are treated as a different class of owners. When plans are drawn up, employees are not given details of the proposed transaction and have no ability to question or challenge the action. Clarification of the management of voting stock is needed given the differences between ESOPs and other benefit plans holding shares of stock on behalf of employees.

A COMMENT ON LABOR RELATIONS

One presumed benefit of employee ownership which has gone largely unexplored is the nature of labor relations under ownership plans. Some managers have argued that these plans are a device for avoiding unions (GAO, 1986) or for making existing unions unnecessary (Stern and Comstock, 1978; Kruse, 1984).

Evidence accumulated thus far does not sufficiently address the labor relations issue, but labor unions began with very skeptical views (Stern and O'Brien, 1977) and many have remained skeptical. The labor movement itself continues to debate the merits of employee ownership largely because experiences have been so highly varied and the implications of employees becoming firm owners are so ambiguous (LRR, 1985).

Debate centers upon the uncertain role which unions play in employee owned firms and in worker participation schemes. Some prominent collective bargaining settlements have included employee stock ownership in exchange for deferred or reduced compensation. Employee ownership should lead to greater labor-management cooperation whether in organized or unorganized contexts. Cooperation in the form of participation seems to be necessary to capture employee ownership benefits. However, the intense conflicts experienced at South Bend Lathe, Hyatt-Clark and the Rath Packing Company as well as other firms testify to the difficulty unions may face. Adverse economic results due to declining share value and firm performance may have a negative impact on both labor-management relations and worker motivation. Working out labor's position as labor rather than owner under these plans may require outside assistance and considerable shifting in traditional adversarial thinking.

IMPLICATIONS FOR NATIONAL POLICY

Since employee ownership through ESOPs was first mentioned in the Regional Rail Reorganization Act of 1973, there have been at least 19 pieces of Federal legislation enacted that deal with employee ownership in some way. The most critical pieces involve ERISA under which these defined contribution plans fall and tax legislation particularly in 1984 and 1986 which altered the tax treatment of ESOPs. The result has been the slight broadening of the holding of stock, the provision of an important employee benefit, the ability of entrepreneurs to manage financial needs and a number of other effects outlined in the preceding discussion. These benefits have come without decreases in firm performance, but the evidence argues that increased performance is possible if ownership is coupled with participation in decision making.

1) Stimulating State Level Technical Assistance

Government legislation established the general legitimacy of employee ownership and stimulated the substantial growth in the number of ESOPs which has occurred. However, the tax and administrative requirements pertaining to ESOPs are substantial. Around this growth sector of the economy, a variety of external legal, financial and accounting expert consultants have developed practices. The assistance available privately for initiating and financially structuring plans is substantial, but relatively expensive. The continuing necessity that a valuation be placed on stock also requires the retention of independent consultants, particularly for private firms. At the same time that the consulting help and diffusion of information needed on the financial aspects of employee ownership has appeared, there has been a noticeable lack of outside professional help available to deal with changed work relations and worker participation.

The social, psychological and work restructuring side of employee ownership largely has been left to non-profit organizations such as the National Center for Employee Ownership and the Industrial Cooperative Association or to academic researchers. Perhaps the importance of participation and the rethinking of labor relations was unrecognized or the idea was viewed as unimportant or idealistic. Often, participation is a secondary consideration relative to financial issues. However, the research evidence on improved organizational performance demands attention to this aspect.

Assistance with employee ownership has been provided from one additional source to which our attention should be turned. A number of state governments, in seeking to retain and attract industry to their states have developed legislation and expertise in employee ownership which has tended to recognize the importance of both the social and financial aspects of the issue. A few states quickly discovered that in order to use employee ownership as a viable economic weapon in countering employer arguments to leave a state because of high costs, poor labor relations or low productivity, they had to learn to work on labor-management cooperation. Most state economic agencies have substantial contacts with labor and management. The few state agencies which have developed expertise in employee ownership have disseminated information, organized training seminars and conferences which bring together those with experience and those with interest, and provided technical assistance to firms in implementing employee ownership plans on a practical day-to-day basis.

California, Michigan, New York and Wisconsin have established programs aimed at assisting with employee ownership. New Hampshire and New Jersey also have statutes requiring state agencies to provide technical assistance to employee buyouts of closing plants. The New York program is seen as the leading model of what might be done. These states plus Maryland, Massachusetts, Delaware, Pennsylvania and Washington have reporting requirements designed to facilitate tracking of employee owned firms. Illinois, Michigan, New Hampshire and New York have also funded public education programs on employee ownership. Seven states have laws specifically treating cooperatives (Ivancic and Logue, 1986).

The problem with the current state effort is that it has largely been directed at saving threatened plants. Such an approach means that technical assistance is provided for feasibility studies and low interest loans may be provided to save jobs. Experience with implementation of employee ownership is being collected but the effort is focused too narrowly. The positive effects on firm performance, state, and national economy should be drawn from employee ownership in general rather from plant closing economic development strategies. The small proportion of ESOPs established to save failing plants include some notable success stories but many more failures. The ESOP strategy in the trucking industry has been notoriously unsuccessful at saving firms.

The Federal government cannot mandate participation schemes in employee owned firms though some incentives might be developed encouraging their establishment. However, the Department of Labor could assist in stimulating employee ownership aimed at obtaining performance, financing and distribution of wealth effects by supporting the formation of state level organizations to facilitate employee ownership and to help implement the fundamental changes in labor relations which may be necessary.

Such a strategy would take advantage of local expertise and put responsibility for stimulating employee ownership into state rather than Federal agencies. Relatively low levels of funding would be required as one or two full time staff members could manage information dissemination and conference organization to create a network of individuals and firms with employee ownership experience. Funding authorization could mandate dual responsibility for providing assistance on both financial and participation aspects. Thus, the element not currently provided by private sector consultants would be available. More detailed technical assistance might be encouraged from state funds. For example, in New York a university sponsored program called Programs for Employment and Workplace Systems received seed monies to begin operation as a low cost source of help in establishing labor-management cooperation in the context of employee ownership, profit sharing and other innovative cooperative schemes.

Such programs are an opportunity for government to promote labor-management cooperation in a context which seems to have high potential payoff. It is an opportunity to say that employee ownership might be more than a simple fringe benefit; the ownership of capital can be broadened and employees are provided with the chance to participate as owners. The government would be able to stimulate the development of the organizational programs needed to turn the potential productivity and firm performance gains available through employee ownership into practical outcomes.

Further, the existence of state infrastructure for employee ownership might act in a countercyclical fashion with respect to deteriorating economic conditions. A mechanism would be available for considering the economic feasibility of using an employee buyout strategy, and productivity might be improved through the implementation of both ownership and labor-management cooperation. Under economic stability or growth, such a state resource would continue to stimulate both broadened ownership and the improved firm performance available through employee ownership plans.

2) Assessing the Individual Benefit

One of the critical questions addressed by the GAO report was whether or not the lost Federal tax revenue was justifiable given the functioning of ESOPs. In a sense, this macro economic question ignores the firm and individual level issues of cost and benefit which have been raised. One immediate concern of labor unions and analysts as the number of plans grew was whether or not this employee benefit was replacing other current benefits. Unions were particularly concerned that pension plans were being abandoned in favor of less secure ESOPs to the benefit of managers and the detriment of workers.

Anecdotal evidence appears on both sides. Some cases exist where pension plans were given up or other benefits foregone. However, many cases are reported where employee ownership is simply an additional benefit. Both the GAO report and the ESOP Association have reported this finding. How often is the explicit trade off that has been made by unions in airlines, automobiles, trucking and other industries of wages for stock, made implicitly in other cases? Some analysts argue that ESOPs are established to avoid the difficulties of managing defined benefit plans (Blasi, 1988), a view supported by the *Business Week* report.

These questions have not been adequately addressed by current research, and finding answers may be impeded by current reporting systems for pensions and benefits. Data produced by the government report individual coverage by types of benefits. In order to truly assess the effects of ESOPs or any form of benefit on total benefits and to understand the role of ESOPs in corporate strategy, data on fringe benefits by firm must be made available. The Department of Labor could probably provide such information by using data provided on the IRS 5500C form to examine the proportion of compensation provided through each type of benefit and wages. Such reorganization of the data permits a better assessment of the firm and individual level costs and benefits of employee ownership through stock trusts. If such information is already collected, the cost of reorganizing the analysis is minimal. Otherwise, changes in the reporting form are required. A series maintained over time is necessary to see how firms shift their mix of compensation forms in relation to alternative benefits.

3) Simplified ESOP Instruments

ESOP plans may be relatively expensive to set up. Given the current legal and administrative complexities firms must hire outside legal and accounting help to design plan instruments and complete necessary application procedures. The cost may inhibit small firms from establishing employee ownership plans.

Current policy regarding pension plans permits small firms to complete standardized documents to set up a uniform pension plan. In such small firms, ESOPs are likely to be effective in producing productivity and behavioral benefits because the organizations are small enough to give workers a perception of substantial influence. They can more easily see the consequences of individual action with respect to firm performance. The Department of Labor should develop a simplified ESOP document which would permit firms under 15 or 20 employees to establish plans at a relatively low initial administrative and legal cost. However, such a form provides only a limited incentive in some cases because of the substantial costs involved in periodic valuation of the shares.

4) Shareholder Rights under Employee Ownership Plans

One of the difficult areas in which policy intervention may be justified is the manner in which employees and employee stock are treated with respect to shareholder rights. If securities and benefit law is to be interpreted to allow these situations, then some provision permitting employees to review plans particularly in the case of leveraged buyout schemes seems appropriate. Further, the relationship between participants and fiduciaries with respect to instructions on voting shares must be clarified. The change might be accomplished by first extending to employee shareholders the same rights extended by SEC regulations to bondholders in firms of 500 or more employees. Such protections are the same as those afforded investors in public corporations. Second, the relative independence of fiduciaries from employers' influence should be affirmed.

However, there is great risk inherent in such changes. The movement toward equity in treatment might in fact reduce employer incentives to establish ESOPs in privately held firms. The transactions here which often involve a principal owner selling his interests to the employees (60 percent of leveraged plans) or raising capital (26 percent of leveraged plans) might be inhibited by having to reveal information about firm finances and individual benefits, and the possibility of challenges by prospective employee shareholders. Thus, establishing a socially just and investor protected set of shareholder rights for ESOPs might jeopardize the growth in the number of such plans. Interestingly, this issue is not relevant to the direct ownership, cooperative form as individuals have rights to participate in decisions and jointly establish the rules for obtaining, selling and managing shares for their collective benefit.

Though questions might be raised regarding vesting provisions, direct voting rights, repurchase mechanisms and other ESOP issues, they seem less serious at this point than the overall form which the share ownership is taking and the voting of unallocated shares on major issues. The policy goal of broadening wealth is being managed in a less than equitable manner. Broadened ownership is being managed less to the benefit of the new "owners" than it could be. Employee owners are treated more as employees than owners. Perhaps such a system explains some of the inability of stock ownership to produce performance effects in the absence of participation. The cultural expectations and meaning of property ownership are not being reinforced or promoted by the current legal and financial structure regulating ESOPs.

CONCLUDING COMMENT

Perhaps the most important aspect of government policy regarding the promotion of employee ownership is that it conveys to the public and particularly to those who create and manage organizations, the message that employee ownership is a legitimate and appropriate form of organization for economic enterprise. Numerous public opinion polls show general support for the idea that people who work in a firm should have an ownership stake in it (though some evidence suggests that owners of private firms have trouble entertaining the idea of workers owning company stock [NCEO, 1988]). The idea of employee ownership is entirely consistent with American values and holds the potential for improved organizational performance and individual welfare.

However, that promise has met only partial fulfillment. The problem appears to reside in the limited salience to employee owners of the financial stake they receive. This investment in stock is normally of small size and its seems distant from a direct relationship to work behavior. The benefits of ownership on firm performance and individual commitment, satisfaction and behavior occur when the ownership stake becomes salient through its treatment as a "real" ownership stake. That is, effects are seen when worker owners receive adequate information about the organization and the value of their investment, and when they obtain the opportunity to participate in the decisions about managing the firm. This is no more than the ordinary entrepreneur receives from his/her own investment and risk taking activity.

We have been enormously short sighted to believe that the performance effects would occur in the absence of the same incentives which the capitalist form of economy has relied upon to stimulate its growth and success. Long term expected results appear unlikely when the benefit accrues largely to the former owner(s) of the firm.

The cooperative form provides an important lesson here because such benefits and risks are directly relevant to cooperative owners. However, cooperatives have suffered because they have some difficulty in organizing joint decision making structures as they grow. Organizational governance may become the crucial problem for such firms after adequate management and financial resources have been developed. They also face some economic incentives (which may be avoided by proper structuring) leading away from adequate investment in new capital equipment. Within the U.S., cooperatives exist in a generally unsupportive environment without institutional mechanisms to sustain them as a broadly accepted form of business organization. The employee stock ownership form has the potential to avoid the collective decision problems and economic disincentives by grafting the broadened ownership onto the existing financial and governance structure of the capitalist firm.

However, a shift in thinking is required. Having owners working within a firm means that traditional management-labor adversarial relationships must be altered. Managers must think about and use power differently then in traditional firms. Employee shareholders must be viewed as a legitimate stakeholder group demanding better performance from the firm and acting to obtain it. Such a shift in managerial practice is difficult and may discourage some private entrepreneurs from using this organizational form, but employee stock ownership is entirely consistent with the shift toward cooperative labor-management relations which is being promoted as a necessity to make American firms more competitive (e.g., Kochan et al., 1986).

REFERENCES

Aldrich, Howard and Robert N. Stern. "Resource Mobilization and the Creation of U.S. Producers' Cooperatives, 1835-1935." Economic and Industrial Democracy 4(1983): 371-406.

Bellas, Carl. Industrial Democracy and the Worker Owned Firm. NY: Praeger Publishers, 1972.

Blasi, Joseph R. Employee Ownership Through ESOPs: Implications for the Public Corporation. NY: Pergamon Press, 1987.

Blasi, Joseph R. Employee Ownership: Revolution or Ripoff? Cambridge, MA: Ballinger Publishing Co, 1988.

Bloom, Steven M. "Employee Ownership and Firm Performance," Ph.D. dissertation, Department of Economics, Harvard University, (1985).

Bureau of National Affairs. Employee Ownership Plans. Rockville, MD: BNA, 1987.

Conte, Michael and Arnold Tannenbaum. "Employee Owned Companies: Is the Difference Measurable?" Monthly Labor Review, 101(July, 1978): 23-28.

nte, Michael and Derek Jones. "In Search of a Theory of the Formation for U.S. Producer Cooperatives: Tests of Alternative Hypotheses." Proceedings of the 37th meeting of the Industrial Relations Research Association (1984):377-384.

Curl, John. History of Work Cooperation in America. Berkeley, CA; Homeward Press, 1980.

Dahl, Robert A. A Preface to Economic Democracy. Berkeley, CA: University of California Press, 1985.

Davis, Eleanor. Employee Stock Ownership and the Depression. Ann Arbor, MI: Edwards Brothers, Inc., 1933.

Farrell, Christopher and John Hoerr. "ESOPs: Are They Good For You?" Business Week, (May 15, 1989): 116-122.

Foerster, Robert F., and Else H. Dietel. Employee Stock Ownership in the United States. Princeton, NJ: Princeton University Press, 1926.

Foster, Kenneth. "How Cost Effective are Stock Options?" Compensation Review 2(April, 1973): 11-18.

General Accounting Office. "Employee Stock Ownership Plans: Interim Report on a Survey and Related Economic Trends." report GAO-PEMD-86-4BR. Washington, D.C., GAO, 1986a.

General Accounting Office. "Employee Stock Ownership Plans: Benefits and Costs of ESOP Tax Incentives for Broadening Stock Ownership." report GAO/PEMD-87-8. Washington, D.C.: GAO, 1986b.

General Accounting Office. "Employee Stock Ownership Plans: Little Evidence of Effects on Corporate Performance." report GAO/PEMD-88-1.Washington, D.C.: GAO, 1987.

Granrose, Cherlyn, Eileen Appelbaum and Virendra Singh. "Saving Jobs Through Worker Buyouts: Economic and Qualitative Outcomes for Workers in Worker Owned, QWL, and Non-QWL Supermarkets." Proceedings of the 37th annual meeting of the Industrial Relations Research Association (December, 1985):196-204.

Grossman, J. "Cooperative Foundries." New York History, 24 (April,1943): 196-210.

Gunn, Christopher. Workers' Self-Management in the United States. Ithaca, NY: Cornell University Press, 1984.

Hammer, Tove Helland and Robert N. Stern. "Employee Ownership: Implications for the Organizational Distribution of Power." Academy of Management Journal 23(1, 1980): 78-100.

Hochner, Arthur, Cherlyn S. Granrose, Judith Goode, Elaine Simon and Eileen Appelbaum. Job Saving Strategies: Worker Buyouts and QWL. Kalmazoo, MI: W. E. Upjohn Institute for Employment Research, 1988.

Ivancic, Catherine and John Logue. "Employee Ownership and the States: Legislation, Implementation and Models." Kent, OH: Kent Poplar Press,1986.

Jackall, Robert and Henry Levin. Worker Cooperatives in America. Berkeley, CA: University of California Press, 1984.

Jones, Derek. "The Economics and Industrial Relations of Industrial Cooperatives in the United States, 1791-1939." Economic Analysis and Workers' Management 11(1977): 295-317.

Jones, Derek and Jan Svejnar. Participatory and Self Managed Firms: Evaluating Economic Performance. Lexington, MA: D.C. Heath, 1982.

Kelso, Louis O. and Mortimer Adler. The Capitalist Manifesto. NY: Random House, 1958.

Kelso, Louis O. and Patricia Hetter Kelso. Democracy and Economic Power. Cambridge, MA: Ballinger Publishing, 1986.

Kochan, Thomas, Harry Katz and Robert McKersie. The Transformation of American Industrial Relations. NY: Basic Books, 1986.

Labor Research Review. "Workers as Owners." Midwest Center for Labor Research (Spring, 1985).

Marsh, Thomas R. and Dale McAllister. "ESOPs Tables: A Survey of Companies with Employee Stock Ownership Plans." Journal of Corporation Law, 6(Spring, 1981): 521-623.

National Center for Employee Ownership. "Worker Cooperatives." The Employee Ownership Report, 7(May/June, 1987): 1,8.

________________. "NCEO-BNA Poll Shows Strong Popular Support for Employee Ownership." The Employee Ownership Report 7(September/October, 1987): 1,3-4.

________________. "ESOP Loans Soar in 1987." The Employee Ownership Report 8(March/April, 1988): 1-2.

________________. "Why Aren't There More ESOPs? New Data Suggests Limits to Growth." The Employee Ownership Report. 8(March/April, 1988): 3,5.

________________. "Leveraged ESOP Transactions Reach $6.5 Billion in 1988." The Employee Ownership Report. 9(January/February, 1989): 1,9.

________________. "Labor Department Issues Mixed Signals on ESOPs as Takeover Defense." The Employee Ownership Report. 9(March/April, 1989): 3.

National Industrial Conference Board. Employee Stock Purchase Plans in the United States. NY: NICB, 1928.

New York Stock Exchange. People and Productivity: A Challenge to Corporate America. NY: Stock Exchange Office of Economic Research, 1984.

Quarry, Michael, Joseph Blasi and Corey Rosen. Taking Stock: Employee Ownership at Work. Cambridge, MA: Ballinger Publishing Co. 1986.

Quarry, Michael and Corey Rosen. "Employee Ownership and Corporate Performance." Oakland, CA: National Center for Employee Ownership, 1986.

Reagan/Bush Committee. Memo, October 31, 1980.

Rhodes, Susan. "The Relationship Between Worker Ownership and Control of Organizations and Work Attitudes and Behaviors." Report to the Employment and Training Administration, U.S. Department of Labor, 1978.

Rosen, Corey and Katherine Klein. "Job Generating Performance of Employee Owned Companies." Monthly Labor Review, 106(August,1983): 15-19.

Rosen, Corey, Katherine Klein and Karen Young. Employee Ownership in America: The Equity Solution. Lexington, MA: Lexington Books, 1985.

Russell, Raymond. Sharing Ownership in the Workplace. Albany, NY: SUNY Press, 1985.

Shirom, Arie. "The Industrial Relations Systems of Industrial Cooperatives in the United States, 1880-1935." Labor History 13(Fall, 1972): 533-551.

Stern, Robert N. and Philip Comstock. Employee Stock Ownership Plans (ESOPs): Benefits for Whom? Ithaca, NY; ILR Press, 1978. Key Issues No. 23.

Stern, Robert N. and Rae Ann O'Brien. "National Unions and Employee Ownership." New York State School of Industrial and Labor Relations, Cornell University. Ithaca, NY: mimeo, 1977.

Tannenbaum, Arnold, Harold Cook, and Jack Lohman. The Relationship of Employee Ownership to the Technological Adaptiveness and Performance of Companies. Ann Arbor, MI: Institute for Social Research, 1984.

U.S. President. The President's Tax Proposals to the Congress for Fairness, Growth and Simplicity. Washington, D.C.: U.S. Government Printing Office, (May, 1985).

Webb, Sidney and Beatrice Potter Webb. The History of Trade Unionism. London: Longmans, Green & Co., 1920.

Whyte, William F. "Employee Ownership: Lessons Learned." Proceedings of the 37th meeting of the Industrial Relations Research Association (December, 1984): 385-395.

35a. EMPLOYEE PARTICIPATION, WORK REDESIGN AND NEW TECHNOLOGY: IMPLICATIONS FOR PUBLIC POLICY IN THE 1990s

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INTRODUCTION

Innovations in workplace practices have surfaced as salient issues at various times in the history of industrial relations in the United States. The 1980s have been such a period with important innovations occurring in employee participation, work redesign, and the introduction of new technologies and new systems of production. The purpose of this paper is to review and evaluate these recent innovations and to examine their implications for public policy.

We start by reviewing the piecemeal evidence available on the extent of innovation in employee participation, work redesign, and new technology that has occurred to date and summarize the theoretical arguments that explain their current interest. Then we put these current innovations in their historical and theoretical context by reviewing briefly the lessons learned from innovations in industrial relations practices that occurred in prior decades. The next three sections then discuss innovations in employee participation, work redesign, and new technology and their effects on the performance outcomes of interest to firms, workers, and policy makers. Although each is discussed separately, a central conclusion that emerges from this review is that it is their combination that produces the most powerful benefits for the parties and holds the greatest relevance for public policy. The final two sections of the report discuss obstacles to further diffusion and institutionalization of these workplace innovations and draw out implications for the future of public policy.

The Growth of Workplace Innovations:

Although there are no reliable national data bases that allow precise estimation of the scope of innovation in workplace practices in the 1980s, several ad hoc surveys and the enormous attention paid to these issues by researchers and practitioners support the conclusion that both activity and interest in these issues has escalated to unprecedented levels. For example, a nation-wide 1982 study by the New York Stock Exchange found that 44 percent of responding firms reported some degree of quality circle activity (a form of employee participation). Moreover, three-quarters of these programs were less than two years old. The respondents also reported a high level of job design or redesign activity (46 percent), though the reported incidence of specific work organization changes where lower -- 22 percent reported job enlargement activities, 18 percent reported job rotation activities, and 16 percent reported the use of production teams (NYSE, 1982). The widespread introduction of employee participation activities was corroborated in a 1985 survey in which 36 percent of respondents reported some form of employee participation activity underway in their firms. This number rose to 45 percent for establishments with 1,000 or more employees (Alper, William, Pfau and Sirota, 1985). Continued private-sector activity in the area of employee participation was highlighted in a 1988 national survey of large employers, which found that approximately half reported some form of employee participation program (Ichniowski, Delaney and Lewin, 1988). Again this survey showed that the majority of these participation experiments were initiated in the 1980s.

Although there is little parallel survey data on changes in work organization and the introduction of new technology, there is considerable case-study evidence to suggest that these two areas have occupied a major role in private sector employment relations throughout the 1980s. Indeed, as we will note below, there are strong theoretical arguments and a small but growing body of empirical evidence to suggest that there are important interconnections among these three types of innovation.

The growing attention to employee participation, work redesign and new technology in the 1980s can be traced to changes in the competitive and technological environments facing American firms. The 1980s have been marked by increased international and domestic competition; shorter product life cycles; greater differentiation and specialization in markets and consumer tastes; greater consumer selectivity on product quality; increased availability of new, computer-based information processing and manufacturing technologies, and; increased use of plastics and other new materials. There is growing consensus among scholars and practitioners that as an advanced industrial society, the U.S. must achieve and sustain a comparative advantage by developing and fully utilizing its technological and human resources. This in turn requires changes in industrial relations and human resource practices to achieve and sustain a highly skilled, motivated and committed workforce; flexibility in the organization of work and the deployment of human resources; and a high level of employee participation and labor-management cooperation (Piore and Sabel, 1984; Kochan, Katz, and McKersie, 1986; Marshall, 1987; Walton, 1987).

This same theme is echoed in the reports and recommendations of numerous productivity or competitiveness commissions issued in recent years ranging from the report of President Reagan's Council on Competitiveness (1985) to the report of the Cuomo Commission on Trade and Competitiveness (1988) to the Collective Bargaining Forum, a bipartisan group of corporate chief executive officers and national union leaders (Collective Bargaining Forum, 1987) to report on the role of technology and employment prepared by the National Academy of Sciences (Cyert and Mowery, 1987) to a forthcoming report of MIT's Commission on Industrial Productivity (Dertouzos, Solow, and Lester, forthcoming). Thus, an important distinguishing feature of recent workplace innovations is that they are seen as critical to enhancing the competitiveness of individual firms and the national economy. As we will see, this motivation is somewhat different from the motivations that gave rise to interest in these subjects in earlier periods.

THE HISTORICAL AND THEORETICAL CONTEXT

Current employee participation and work redesign initiatives have been preceded by at least five similar historical developments, each of which hold important lessons for current initiatives. These are (1) the history of union-management committees in the U.S., (2) the rise of the human relations movement, (3) the emergence of socio-technical design principles in Europe and their application in the U.S., (4) the early QWL movement in the U.S., and (5) the growing attention to Japanese production systems. We will review briefly the lessons that can be derived for current innovations from these earlier developments.

Union-Management Committees

The establishment of union-management committees, which dates back in the U.S. to at least the beginning of this century, represents the first set of historical roots. At the turn of the century, joint committees were established in the coal industry regarding mine safety. In the 1920s and 1930s there were union-management committees and shop floor committees established in the textile, garment, and railroad industries -- many of which featured high levels of direct problem-solving about production issues (Douglas, 1921; Jacoby, 1983). During World War II there were over 5,000 union-management committees established to aid in the War-time production efforts (de Schweinitz, 1947). In the 1950s joint committees were established in the steel, meatpacking, longshoring, and other industries to address issues of technological change and the tenor of labor-management relations. In the 1960s and 1970s there was growing usage of issue-specific committees, especially in the areas of employee assistance and health and safety.

Historically, these joint committees have been found to endure so long as they served as a supplement to formal collective bargaining; that is, the committees lasted when they provided the parties a forum for problem solving or integrative bargaining (Walton and McKersie, 1965) that addressed important problems in a subordinate or adjunct relationship to formal negotiations and day to day grievance administration (Gomberg, 1967). Since most of today's employee involvement and work redesign efforts in unionized settings operate under the guidance of a joint committee, a key lesson from earlier experience with labor management committees is that the new initiatives must be linked to the collective bargaining relationship in a way that extends the ability of the parties to solve important problems without undermining or seeking to substitute for the formal bargaining relationship. In short, workplace innovations must be integrated into the on-going bargaining relationship and related governance structures found in the employment relationship (Kochan, Katz, and McKersie, 1986).

Human Relations Movement

The second set of roots for current initiatives lies in what is known as the human relations movement. Beginning with a set of studies at General Electric's Hawthorne works (Rothlisberger, 1941), the human relations movement elevated interest in issues of employee motivation and job satisfaction. Techniques such as job rotation and job enlargement were employed so as to reduce alienation and enhance motivation (Blauner, 1964; Hulin and Blood, 1968). Ultimately, a good job came to be defined as including high task variety, feedback, challenge, autonomy, and the opportunity to learn new skills (Hackman and Oldham, 1980), all of which were expected to contribute to higher levels of individual job performance and organization-wide productivity.

While the techniques and principles that emerged from the human relations movement directly support notions of employee involvement and job redesign, there are two core issues raised by these experiences. The first is the lack of strong and convincing evidence that the humanization of work does actually lead to improved productivity. The evidence is quite strong that participation and job redesign is associated with higher job satisfaction and morale, however, most reviews of the evidence from the 1950s through the 1980s found the evidence for positive productivity effects to be mixed at best (Schwab and Cummings, 1970; Cammeron and Whetton, 1983).

The second caution arises for the failure of the human relations movement to capture enduring the interest or support of significant numbers of line managers, union representatives or workers. Since many of the early experiments were conducted by social psychologists in conjunction with personnel staff, line managers were often skeptical of the benefits of the staff innovations. Moreover, the human relations techniques drew on principles from individual and group psychology that emphasized changing worker attitudes rather than changing worker conditions. As such, many union leaders and workers saw the human relations initiatives as efforts to manipulate employees, undermine the role of unions and weaken collective bargaining.

Thus, a key lesson derived from the human relations movement is that the key power holders in organizations (line managers, union officials) must both be directly involved in the innovation process and must see the changes as aimed at addressing the issues of critical concern to them and their constituents. Ultimately, these key officials must see tangible economic benefits arising from these efforts in order to overcome their innate skepticism of staff or behavioral science driven theories of employee motivation and behavior.

Socio-Technical Systems

A third part of the foundation of current employee involvement and work redesign initiatives lies in the emergence in Western Europe in the 1960s and 1970s of a set of socio-technical systems (STS) design principles. It was first in England that social scientist applied lessons from the operation of leaderless or autonomous groups to workplace settings (Trist, 1981). Then, in Scandinavia, the principles of worker autonomy were linked to the design and layout of equipment, which led to the conceptual notion of blending social and technical systems (Emery and Trist, 1969). While new approaches to auto assembly in Volvo's Kalmar plant are, perhps, the best known examples of the application of STS principles, it is important to note that many aspects of STS are so widespread in Scandnavia (and particularly in Sweden) that they are integral to the laws reglating employment relations. Finally, it should also be noted that manyof the principles of STS draw on principles of job variety and group interaction that were central to the ideas that emerged from the human relations movement.

The issues raised by the socio-technical systems experiences lie in their North American applications, which until recently have been limited to designing from scratch of new manufacturing facilities. Often built in open rural fields (and hence known as greenfield plants) these facilities have earned a reputation for becoming isolated within larger bureaucratic organizations that operated on different principles, which raises serious concerns regarding the diffusion of such innovations. Also, the U.S. greenfield facilities became famous for building high levels of employee commitment (Walton, 1980) and, as a result, most of the plants have remained unorganized by unions. Thus, even though the first union-management quality of work life initiatives in the U.S. were partly modeled on the European STS experiences, (such as the early Bolivar (Harman) and Rushton experiments) there has been a continued controversy over the extent to which social-technical systems are inherently anti-union when applied in the U.S. context (Kochan, Katz and Mower, 1984).

Moreover, socio-technical analysis lost credibility among some scholars and practitioners over the years for its failure to deliver on its original promise of actually joining the analysis and design of technical and social dimensions of production systems and adapting them to the specific needs of different workplaces. Instead two patterns emerged. First, the technical dimensions were rarely modified in significant ways because few changes were made in the design principles or processes used by engineers to design the hardware dimensions of new technology or production systems. Second, instead of varying the form of work organization to fit different technical or social settings, socio-technical theorists and practitioners tended to advocate one solution--the use of autonomous work groups (Hackman, 1982).

Thus several lessons can be derived from the prior experience with socio-technical models. First, ways must be found to integrate these changes in work organization and technology in existing as well as greenfield sites in order to overcome the isolation effects of earlier experiments. Second, a real joining of the design of the hardware and work organization dimensions of new production systems is necessary to implement socio-technical principles. But this will not happen in the absence of significant changes in the way we design these systems. Third, autonomous work groups or teams are not the only way to capture the motivational benefits of worker participation, flexibility, and autonomy.

Quality of Work Life

The early quality of work life (QWL) initiatives in the U.S. represent a fourth set of roots for current innovations. While collective bargaining language addressing the issue of QWL dates back to 1973 (and the term was coined a few years prior to that), the first experiments aimed at fostering higher levels of employee participation in decision-making did not begin until the late 1970s. The early QWL initiatives, like the STS efforts, drew on principles from the human relations movement. Here, however, the focus was less on the organization of work and more on creating workplace structures that would foster employee participation in decision making.

During the late 1970's, funding for a variety of demonstration projects was provided by the National Commission on Productivity and Quality of Working Life, in conjunction with the Ford Foundation. Despite governmental and foundation support, only a handful of large employers and unions showed interest in the programs. By the end of the decade, support for the National Commission had dissipated. It is ironic that, just as the Commission disbanded, interest in the private sector was about to accelerate. In subsequent years there has emerged a strong information-dissemination role regarding employee involvement and other issues within the U.S. Department of Labor. Within the Federal Mediation and Conciliation Service, there is also a small grant program to support labor-management cooperation.

The early experiences with QWL suggest that it is difficult for government policy makers to motivate workplace innovation in the absence of a shared interest or an accumulated body of experience with these innovations in the business and labor communities. Instead, the initial experimentation with new practices must arise out of the felt needs of management and/or labor. Then, as the more recent work of the Department of Labor and the Federal Mediation and Conciliation Service demonstrate, the government can play an extremely important role in evaluating of these experiments, disseminating information about them to other interested parties, and supporting their diffusion and institutionalization. We will return to a detailed discussion of this important lesson in the final section of this report.

Japanese Management Practices

The final set of roots for current employee participation and work redesign initiatives lies in the Japanese experiences with quality circles and new production operations. It was the success of Japanese firms in automobiles, electronics and other industries that elevated public interest in the use of quality control circles (employing statistical process control (SPC) techniques), just-in-time delivery and tight feedback loops in production operations.

Initially, the various Japanese management practices were treated in a piecemeal fashion. For example, quality control circles (QC) were introduced as stand-alone interventions in a number of firms. The high failure rate of QC's and other efforts to imitate Japanese practices piecemeal were taken by some as evidence that these principles were not transferrable to the American culture and environment.

More recently, however, the economic performance of plants in the U.S. operated by Japanese owners and managers that have adapted broader components of Japanese production and human resource management systems (the so-called "transplants") have begun to change this view. While we will discuss the evidence on these transplants more fully later in this report, it is worth noting here the central lesson that is emerging from the debate over Japanese management practices; namely, it is no single technique or practice that produces significant and sustained differences in outcomes but rather the totality of the approach to integrating technology and human resources with the long term strategies and values of the firm that appears to be important. Again, this theme of the importance of achieving a close integration among innovations in workplace practices will be evident as we review the evidence on the effects of the 1980s efforts with employee participation, work redesign and the introduction of new technologies and production methods.

EMPLOYEE PARTICIPATION

The most frequent innovation initiated in industrial relations in the 1980s has been some form of employee participation. In our previous work on this subject we emphasized the need to examine the dynamics of these processes over time since their long-run fate and impact are determined by whether or not the parties successfully negotiate their way through various pivotal events or crises (Kochan, Katz, and Mower, 1984; Kochan and Cutcher-Gershenfeld, 1988). We will follow this approach here and leave to the companion paper being prepared by Levine and Strauss a discussion of the various structural factors that influence the success of these efforts.

Since the vast majority of participation processes have been initiated by employers in response to pressures to increase quality, reduce costs, or solve other production problems, the first challenge faced by these efforts lies in achieving worker and, if present, union, support and participation in the processes. In the early 1980's, employee acceptance of participation followed a frequently repeated pattern whereby up to one third of the workforce in a given location would volunteer for a problem-solving group, but there would be a sharp decline in the rate of further participation (Kochan, Katz, Mower, 1984). The evidence suggests that the declining levels of participation can be traced to at least three factors: (1) worker and/or union concern that the process only serves the employers' interests, perhaps even at the expense of employee and union concerns for employment security and other objectives valued by workers and union leaders; (2) the related lack of direct links between participation and any tangible financial rewards; and (3) divergence in worker preferences regarding the form and intensity of participation they prefer to be involved in on their jobs.

Within the first few years of the establishment of an employee participation effort there are one or more test issues that begin to signal the extent to which the effort will serve the interests of employees and a union (if present), as well as the interests of the employer. Examples of such issues include whether employee suggestions for increased efficiency threaten any individual's job security; the speed of implementation on issues relating to employee safety and comfort; the extent to which problem-solving activity is seen as undercutting collective bargaining; management's openness to discussing issues that are traditionally managerial rights such as access to confidential information and work allocation decisions; the provision of financial rewards or a sharing of the gains from participation; acceptance by both the company and the union of a structure for problem-solving that runs parallel to both the company hierarchies and the collective bargaining grievance procedure; and the signals sent by concurrent managerial decisions about new technology, subcontracting, new facilities, executive bonuses, and related matters. Such issues are pivotal events in the life of an employee participation initiative -- if they are resolved successfully, the initiative is reinforced and often expanded; if they are not, the initiative is undercut, interest and activity plateau and often the process is abandoned (Cutcher-Gershenfeld, Kochan, and Verma, 1987).

A second factor that can contribute to the decline of an employee participation initiative lies in a set of psychological questions that are only partly understood by the research community. While attitude surveys consistently report that U.S. workers want a high level of input in workplace decisions that directly affect them, the same workers differ greatly on the nature and scope of involvement that is seen as meeting this need. The range of employee preferences is illustrated in the case of Xerox and the Amalgamated Clothing and Textile Workers Union (ACTWU), were the parties established a contingent structure that allowed for many forms of employee participation. Now, four years later, we observe some employees who just want to attend monthly or bi-weekly information meetings; others who will volunteer on an ad hoc basis to serve on problem-solving teams to address a specific issue or concern; still others who will serve on a continuing basis as members or even leaders of problem-solving teams; and, finally, some employees who will pursue the option of establishing themselves as autonomous work teams (Cutcher-Gershenfeld, 1988). This experience and others like it would suggest that a pivotal event in the life of an employee involvement program that features just one form of participation may emerge at the point that all of the employees who prefer that form are involved. Further expansion (and even the stability of current efforts if an in-group and out-group is to be avoided) will depend on institutional flexibility in the structure of employee involvement.

Effects of Participation on Economic Performance

In recent years, there has been a growing volume of research on the relationship between employee participation and economic performance. Most of the literature has focused on initiatives that are still facing the sort of initial test events outlined above, without much consideration to the way participation efforts may evolve or without much attention to parallel changes occurring in work organization or to the introduction of new technology. Setting these limitations aside for the moment, those studies that have attempted to isolate the independent effects of employee participation have found few significant effects on productivity (Gershenfeld, 1987; Whyte, et al., 1983). There is some evidence of very small or modest effects on product quality, and some positive impacts on othe. outcomes such as declines in accidents, absenteeism, and grievances (Goodman, 1980; Rosenberg and Rosenstein, 1980; Katz, Kochan, and Gobeille, 1983; Katz, Kochan, and Weber, 1985; Katz, Kochan, and Keefe, 1987; Witte, 1980; Cammman, Lawler, Ledford, and Seashore, 1984; Ichniowski, Delaney, and Lewin, 1988). We interpret the literature as confirming the limited impact of employee participation taken by itself. But what if an employee participation initiative endures and expands in focus?

Cutcher-Gershenfeld (1988) investigated this specific question in his quantitative evaluation of the combined effects of employee participation and a variety of other changes in, problem solving, conflict resolution, worker autonomy, work redesign, and information sharing at Xerox. He found that, consistent with the previous studies, when examined alone, participation in the form of structured problem solving showed relatively weak performance effects. However, a combined measure of workplace innovations that included participation with the other changes listed above were found to be associated with improved performance on a variety of critical outcomes including productivity, unit costs, and quality. We interpret these results as further support for the hypothesis that, standing alone, employee participation is associated with modest economic returns to employers, workers, and unions. But the impact of participation is substantially greater if the parties allow it to expand into broader areas, allow more flexible forms of problem solving and work organization to be implemented (as they are suggested by those involved in the participation effort), and (in unionized settings) are successful in integrating the participation effort into the ongoing union-management relationship.

Effects of Participation on Institutional Practices

If the participation initiative survives an initial round of pivotal events, and broadens out in the way described above, its impacts on the parties go far beyond its direct performance effects. The initiative will challenge a variety of traditional practices and begin to affect the most fundamental interests of labor and management. These include the basic structure of compensation, the overall level of employment security, the protection of management rights, and the very roles of employees and supervisors. In unionized settings, deeper questions are also raised regarding the roles of union leaders, the role of collective bargaining and the institutional security of the union.

As the scope of employee decision making expands, for example, the line between managerial and employee authority blurs. Not only does this subject employees to a whole range of new managerial stresses, while at the same time, leaving supervisors feeling isolated and threatened (Parker and Slaughter, 1988; Klein, 1988), but it raises policy questions about who has exempt status under the law. For union leaders there are fundamental dilemmas regarding the degree to which they can concurrently support joint initiatives while still maintaining the image and reality of their independence from management (Cutcher-Gershenfeld, McKersie, and Wever, 1988). Further, as employee problem-solving engages issues that really matter to either the employer or the employees, it is likely that there will be implications for wages, hours and working conditions. That is, even if employee participation efforts in unionized settings are declared to be independent of collective bargaining, either the efforts will have deteriorated or they will have an impact on the bargaining relationship through the treatment of issues such as employment security, new technology, work organization, gainsharing, and training.

Thus, if an employee participation initiative is to endure for more than a few years and if it is going to make a difference for any of the parties involved, fundamental changes will have taken place in the employment relationship. Perhaps it is not surprising, then, that many employee participation efforts have not lasted more than a few years (Goodman, 1980; Lawler and Mohrman, 1986; Drago, 1988). Thus, it is our conclusion that narrowly focused employee participation initiatives will not be likely to serve the interests of either labor or management and, as such, will not be likely to endure or diffuse throughout the economy.

In order to construct a broader picture employee participation efforts, it will be necessary to examine the dynamics associated with changes in the design of work and the introduction of new technology.

WORK REDESIGN

This section will summarize developments in work redesign in recent years. For illustrative purposes, it will assess the experiences of one industry that has invested heavily in work redesign efforts -- the auto industry.

Work Redesign in the 80s

Three inter-related work design initiatives appeared to gain strength during the 1980s, and to show prospects for longer-term durability: 1) the use of work teams; 2) the reduction of job classifications and work rules (at times combined with compensation plans that encourage skill acquisition); and 3) integrating the responsibility for quality control into production or operational jobs. We will review each in turn before tracing their application in the auto industry.

The move to work teams incorporated a range of efforts to restructure work to be shared among a group of employees. Most teamwork systems are more modest in scope than the self-managing teams of socio-technical theory. Common features of team work systems include an elected or appointed team leader who both supports the team (training, getting materials, replacing absent members) and coordinates interactions between the team and the rest of the organization (on such issues as scheduling, quality, staffing); a weekly team meeting for information-sharing and/or problem-solving; and the application of some human resource/labor relations policies (such as compensation, overtime equalization, absenteeism, job bidding rights) at the group rather than the individual level.

A work team structure has a number of advantages. First, it is easier to design more varied and complex work for a group than for an individual. Second, a team provides a natural structure for job rotation, training, problem-solving activities, and communication. Third, less traditional supervision is needed because peer pressure among team members, in combination with team-centered policies, self-regulates team activities. Fourth, teams serve a social function, with members forming strong ties that often persist outside of the workplace.

The reduction in job classifications and work rules is a closely aligned change whose primary goal is increased flexibility in the deployment of labor to meet fluctuating production and/or market conditions. In some cases employers sought reduction in classifications as part of concession bargaining package aimed at reducing costs. While such flexibility and cost reduction had been sought by managers in many industries starting in the 1970s, it was only when reduced classifications became linked to a strategy of training workers in multiple skills (and when foreign competition revealed the inefficiencies of existing systems) that this restructuring became more widely accepted by unions as well.

In the extreme case of a single classification for production workers and a couple of classifications for skilled trades, there are other important effects besides flexibility. Wages no longer bear any relation to specific jobs and all position-related status differentials among workers are eliminated. This shifts worker incentives in the direction of skill acquisition as a source of status and satisfaction.

Some companies have introduced compensation plans that bolster the incentive for skill acquisition, generally in combination with the reduction of job classifications. In such plans, most commonly known as "pay for knowledge", an employee can move through a progression of pay increases by mastering an increasing number of skills. The diffusion of this approach has been limited, in part because its motivational level is limited once employees reach the top of the pay scale for acquired skills. Furthermore, unless the mastery of skills stimulated by "pay for knowledge" plans is linked to work structures that insure the regular exercise of those skills, the desired degree of flexibility may not be achieved. Finally, difficult equity issues are sometimes encountered when converting to pay-for-knowledge plans requires the placement of some workers in the upper range of the pay scale.

The third change, the integrating of quality control into production or operation jobs, is an outgrowth of intensified competitive pressures for quality and a reflection of the influential philosophy that quality must be "built in" rather than "inspected in". It also reflects a different approach to work redesign that emphasizes the "vertical integration" of staff functions into operational jobs. This approach provides more variety, complexity, and challenge than earlier job enlargement efforts; for example, workers responsibility for quality checks often receive training in Statistical Process Control and maintain process control charts. Workers also become an integral part of the communications system in which feedback about discovered defects is sent speedily to the source of the problem.

Work Redesign in the Auto Industry

All of the work redesign initiatives listed above, bundled together under the name "team concept", have been the focus of extensive restructuring efforts in the U.S. automobile industry in the 1980s. As such, this case is worth examining for its lessons about the effectiveness of work teams and other structures.

There has been an intensive debate over the advantages of teams, reduced job classifications, and the assignment of quality control to workers within the United Auto Workers union. Advocates of team concept within the union argue that it is necessary for competitive survival, it offers workers more variety and a chance to learn new skills, and is consistent with the union's long-term goal of achieving industrial democracy (Ephlin, 1988; Lee, 1988). Union opponents claim that the team concept weakens seniority rights and increases workload by adding new responsibilities such as quality control; that team leaders are pseudo-foremen, under management control despite their hourly status; that the peer pressure within teams pits workers against each other, and leaves no clear target for grievances; and that the team concept is a ploy to help management justify a reduction in job classifications and work rules, which increases managerial discretion (Parker and Slaughter, 1988).

Furthermore, the actual implementation of the team concept by U.S. auto companies has varied widely. In some plants, the team concept was established as the basic work structure from the time they opened. In other plants, the team concept was a negotiated change, often as a concession from the union in return for a management commitment to invest in a new product line or process technology. In some plants, teams are little more than a formal designation of sub-groups of workers, with no job rotation, team leaders who primarily provide absenteeism relief, and little communication or coordination among teams. In other plants, all aspects of the team concept seems to be functioning quite completely and effectively. Finally, there are still many plants that have not attempted to implement any aspects of the team concept.

Given this record of controversy and partial implementation, it is perhaps no surprise that the expected economic benefits of the team concept have not consistently materialized. Indeed, a recent study (Katz, Kochan, and Keefe, 1988) carried out within the company that has used teams most extensively, found that after controlling for the effects of participation, degree of cooperation, and other labor relations practices, the _independent_ effects of work teams on economic performance ranged from zero to slightly negative.

This result could be interpreted as an outcome of the idiosyncratic conditions under which the team concept was introduced in this company, as a sign of poor implementation, or as evidence that teams per se are less efficient than their proponents suggest. But we believe it has a larger significance -- that the team concept, like employee involvement, can accomplish little unless it is integrated with broader changes in organizational structure, production practice, and business or technology strategy. Below, we will argue the "integration" hypothesis more fully, and provide evidence that the team concept does lead to improved economic performance in such an integrated system. But first, we will briefly discuss another major development of recent years -- the proliferation and rapid diffusion of new microprocessor-based technologies, and its significance for employee involvement and work redesign.

THE ROLE OF NEW TECHNOLOGIES

By now, the dramatic impact of the microprocessor on the technological capabilities available to organizations is well-known. (e.g. Forester, 1980;1985). The pace and scope of the change brought about by advances in microchip technologies has been remarkable. What is less appreciated is the impact of this technology on the range of possibilities for both organizational structures and work design. We speak here of an impact on possible structures and designs because microprocessor-based information technology is so flexible that it can either reinforce and replicate existing organizational arrangements or support a wide variety of alternatives. Research seeking to understand the organizational impact of information technology has so far only succeeded in demonstrating that the technology has no determinate force -- that it assumes different forms and has different consequences in different contexts (Walton, 1981; Attewell, 1987; Chalykoff, 1988).

This very indeterminacy highlights the importance of management choices about technology strategy, both for the work reforms discussed above and for the very effectiveness of the technology once in place. A traditional approach to technology will contradict and constrain these work reforms and will limit its overall effectiveness. There are alternative technology choices which can complement and strengthen work reforms and improve the utilization of new technological capabilities as well.

The traditional approach to technology development and implementation is antithetical to the work reforms discussed above. Technology design is carried out by isolated technical specialists following Tayloristic principles who deliver a finished product to be implemented, after which the organization is expected to "adapt" to the technology. Employee involvement, if considered at all, is only part of a bid to overcome employee resistance during the last stages of implementation. Work redesign is similarly confined to issues of "ergonomics" or the "user interface." Finally, any job loss, deskilling, or otherwise detrimental impacts on employees are seen as inevitable, with managerial efforts devoted to minimizing their extent.

Thomas (1988) has demonstrated why the traditional approach to the design and implementation of new technology discourages innovations in work organization and human resource policies. He traced the decision-making process for three manufacturing technologies from the earliest conception of the problem to their implementation on the shop floor. His results showed that, under conventional arrangements, work organization and human resource issues get addressed very late in the decision sequence, long after the hardware choices are made. This not only constrains the range of options open for work organization design. It also leads human resource managers and union representatives with little to do but negotiate over pay rates and classification issues thereby reinforcing traditional adversarial relationship patterns.

However, another course can be chosen. The change to new technologies provides opportunities for broader organizational change because it helps to "unfreeze" existing policies, practices, and attitudes (Lewin, 1948). At such a time, employee involvement efforts increase in value for two reasons: 1) They can result in better communication from managers to employees about the change -- the rationale, the capabilities of the technology, the impact on jobs and skills -- and increase manager's understandings of the perceptions and concerns of employees; 2) They can produce better ideas about how new technological capabilities can be utilized.

This is equally true of communications between technology users and designers. One recent study of the development of new information systems examined the effects of different patterns of interaction and involvement of users and designers and found that the most effective applications resulted when both groups exerted a high level of mutual influence through the problem formulation, solution, and implementation stages of the process (Henderson 1988). Similar research on new product development has also highlighted the advantages of parallel engineering and development processes whereby various organizational stakeholders have continuing input from the earliest stages (Dougherty, 1987).

Flexible technologies also make possible a wider variety of different work designs. The steadily reducing costs of computing power make it possible to consider alternate work designs that were perhaps technically feasible but overly costly with previous generations of technology. This can alter manufacturing processes quite dramatically. Volvo has used Automatic Guided Vehicles to pioneer an alternative to the moving assembly line, with these computer-controlled carriers moving between work stations and then stopping to allow teams of workers to complete assembly tasks; at the new Uddevala plant, each team will build only 1-2 complete cars per day, with parts also automatically routed to the right work station.

The flexibility of computer-controlled machine tools allows for frequent changes in product mix, thus making it economical to reduce product "batches" and to produce a more complex mix of customized or niche products. In short, this technology eliminates many of the cost advantages of the high volume production of standardized goods. Finally, microprocessor-based technologies have the ability to "informate" as well as "automate" -- to provide extensive information about work processes that can be used to improve both processes and products, as well as carrying out such processes directly (Zuboff, 1988).

The traditional approach to technology is still dominant. But its limitations are becoming increasingly obvious. Even in the normally pro-technology business press can be found grumblings that the expected payoffs from information technology are very slow to materialize. Economists who have studied this problem agree that investments in information technologies have achieved very poor economic returns compared to other forms of capital investment (Loveman, 1988; Roach, 1987).

We are brought back again to our integration hypothesis. Traditional technology strategy, with its faith that technology alone is the path to competitive advantage, both undercuts work reform efforts and results in the underutilization of technological capabilities. Moreover, because the traditional strategy maintains a serial approach to decision making, the earliest problem definition and design stages are dominated by technical and financial professionals with little knowledge of or motivation to consider human resource issues. This biases the entire process toward strategies that emphasize investments in new and often overly complex hardware which further increases the costs and the time required to implement new systems. In contrast, a technology strategy and development process which supports and is integrated with employee involvement, work redesign, and other human resource/labor relations policies should result in better utilization of the technology and improved organizational performance.

INTEGRATION OF PARTICIPATION, WORK REDESIGN, AND TECHNOLOGY

For much of this paper, we have reiterated the theme (and provided the evidence) that isolated initiatives, whether in employee involvement, work redesign, or new technology, tend to be short-lived and to have relatively little impact on the organizational outcomes they are intended to produce. In this section, we will examine in more detail the corollary argument -- what we have been describing as the "integration" hypothesis.

As an example, we will focus on a recent development that constitutes a kind of natural experiment for the hypothesis we wish to test: the establishment of new manufacturing plants that are owned by

Japanese companies (or in joint venture with American companies), located in the U.S., and employ American workers, engineers, and managers. These facilities are known as "transplants".

The logic of the natural experiment is as follows: The Japanese approach to organizing a production system involves the extensive integration of technology, production practices, and human resource policies -- including employee involvement and the team concept. As utilized in Japan, such a production system has achieved productivity and quality performance far surpassing most American competitors. If this same production system can be found in the Japanese transplants in the U.S., and if the performance outcomes are comparably high, we can conclude that it is not the characteristics of a national culture, a company, or a workforce but distinctive characteristics of the production system that explain those outcomes -- namely, the integration of the elements described above.

A "Humanware" Perspective

First, we will explore exactly what "integration" means in the Japanese production system. Shimada and MacDuffie (1987) use the concept of "humanware" to capture the interdependence between the technical and human resource systems in the Japanese approach to manufacturing systems. As illustrated in Figure 1, the production system is highly dependent on human resource capabilities that achieve high levels of skill, motivation, and adaptability. These human resource attributes are necessary to support such production policies as just-in-time production (in which inventory levels are kept low to minimize costs and highlight production problems), quick die changes (in order to make the production of smaller lots economical), quality inspection built into production jobs (in order to build in quality the first time rather than inspecting it in later), and minimal repair areas (because with no place to put vehicles needing repair, the pressure to achieve quality on the line is maximized). Together these human resource and production policies are expected to achieve both high productivity and high quality.

Furthermore, other distinctive features of Japanese employment policies and work organization are also an outgrowth of the integration of human resource and technology strategies. These include recruitment to long-term employment, for which a willingness to learn new skills is more important than previous experience; extensive training and job rotation to develop multiple skills; compensation contingent on performance, particularly skill development; internal promotion; low status differentiation among managers and workers; and work teams. Complementing these policies and structures is the incremental, continuous problem-solving (kaizen) that is an integral part of daily production activities. Kaizen improves performance not only by eliminating production problems but also by maintaining and improving the skills, adaptability, and motivation of the workforce. Thus, problem-solving processes are the dynamic element that makes the integrated production/human resource system operate effectively; employee involvement in the most fundamental aspects of the firm's work.

Shimada and MacDuffie characterize the Japanese approach to production as "fragile" because a system so dependent on the contribution of human resources is quite vulnerable to any drop in the skill, motivation, or flexibility of the workforce. In contrast, the traditional American production system is "robust" because it attempts to protect the production process from the effects of varying contributions from the workforce: narrowly defined jobs that can be filled by interchangeable, low-skilled workers; large inventory buffers that minimize the disruption caused by production errors or poor quality parts; extra employees to cope with higher absenteeism; sophisticated quality control inspection system and specialized personnel to catch defects after production is completed; and technology designed to limit worker discretion.

While this approach was developed in Japanese organizations, it is not culturally-bound. In fact, Shimada and MacDuffie find that the Japanese production system has been quite completely transferred to Japanese-owned "transplant" operations in North America. Mahoney (1988) reached the same conclusion in a careful and detailed study of a Japanese auto parts supplier. There are minor differences, just as there are differences in the production systems of different Japanese companies, but the similarities are far more pronounced than the differences, particularly in contrast with U.S. practice.

Effects of an Integrated Production System

The economic performance of this approach to production is well demonstrated in a series of M.I.T. studies, again in the automobile industry. The first study (Krafcik, 1988) involved 32 automobile assembly plants owned by a variety of companies and operating in a number of countries. Productivity data, based on the number of direct, indirect, and salaried labor hours per vehicle, was collected during plant visits and later adjusted to achieve comparability, using such factors as the size of the vehicle, the option content, and the number of welds required by the product design; further adjustments were made so that only a set of "standard activities" common to all plants were considered in assessing performance.

This analysis showed a wide variation in economic performance among the 32 plants in the sample: the five plants in Japan averaged 20.3 hours per vehicle, the thirteen plants in North America (three of which were Japanese transplants) averaged 24.4 hours, and the eleven plants in Europe averaged 33.9 labor hours per vehicle. The Japanese transplants in the U.S., considered separately, average 19.6 hours per vehicle, better than the average of plants in Japan.

Furthermore, the performance differentials in the overall sample do appear to be linked to the degree of integration between technical production practices and human resource policies. When elements of the team concept exist in conjunction with just-in-time inventory systems, the integration of quality inspection with production jobs, and the minimizing of end-of-process repair, high performance results. This same finding is even more true when quality rather than productivity is used as the performance measure.

Further support for the integration hypothesis is provided by detailed paired comparisons of plants following traditional high technology strategies (i.e., major investments in hardware without corresponding changes in work organization and labor-management relations) with plants following a more integrated strategy (moderate investments in new hardware in conjunction with major innovations in work organization, employee participation and related human resource practices). Plants following the integrated strategy achieved significantly higher productivity and quality than did the traditional high technology plants. Moreover, the integrated plants also outperformed conventional low technology plants that had traditional labor relations practices (MacDuffie and Kochan, 1988). These findings have recently been replicated with an expanded sample of 46 assembly plants (Krafcik and MacDuffie, 1989). Thus, technology alone does not appear to be a solution to the competitiveness challenges facing American firms.

What of the social ramifications of a tightly integrated production system? In a system so dependent on the workforce for productivity-improving ideas, some form of employment security is practically a necessity, since few employee will willingly offer ideas that will just result in loss of jobs. Such employment security is, of course, institutionalized for the car workforce in Japan and very rare in the U.S. But to return to the case of the transplants, while they have offered no legal guarantees, they have also not resorted to layoffs even during fairly severe volume downturns, choosing to train employees instead. Again, given the dependence of their production systems on workforce motivation and willingness to learn new skills, one would expect the transplants to have a stronger incentive to maintain employment security than a more "robust" production system.

Opponents of the team concept in U.S. plants (Parker and Slaughter, 1988) voice the same criticisms of Japanese team systems, and address further criticisms at the tightly integrated production system, calling it "management by stress". The very lack of inventory buffers in a just-in-time system that requires worker attention to quality also means that when there is a problem with a faulty part or a machine breakdown, there is tremendous pressure to remedy it; otherwise, the entire department could be shut down, because there is no buffer of extra parts or work-in-progress for downstream work stations to draw on. For critics, this is just another way of squeezing intensified effort out of workers (even though not just workers but everyone in the production system feels the pressure to resolve problems almost immediately).

There is no doubt that the work pace is faster in the tightly integrated Japanese production system, and that the stress can be high as well. What is unclear is whether workers prefer this situation to the tension and low trust that accompanied the traditional system of close, autocratic supervision and adversarial labor relations. Some workers may find the problem-solving activities and multiple job tasks more rewarding, even if stressful, than the monotony of a single narrow repetitive task. Others may prefer the stability and limited mental demands of a traditional assembly line. No one has yet been able to gather the data on worker attitudes in the transplants to answer these questions.

By all available indicators, however, the American workers in the Japanese transplants and similarly structured American-managed plants are relatively satisfied with their experience. Grievances, absenteeism, and turnover are very low. Quality, which is clearly susceptible to worker discontent, remains high. This suggests the appeal of a production system that emphasizes "working smarter", even as it makes demands on worker capabilities typically absent in mass production jobs.

On balance, both economic and social outcomes support the value of the integration of technology and human resource strategies -- of combining participative processes, work structures, and technical tools into a coherent, self-reinforcing production system that depends above all on the quality of the human resources that make it run. But the high performance of such a system is not enough to insure the adoption of such an integrated approach by other companies or in other industries. We turn now to consider why that is so -- why these innovations do not naturally diffuse.

OBSTACLES TO DIFFUSION

In the late 1970s one U.S. representative opposed the passage of an early version of the Labor-Management Cooperation Act of 1978 by arguing: "If this is such a red hot idea, why do we need...the public's money?" (Hearings on H.R. 2596, 1977). Implicit in this statement is the hypothesis that some natural market force or technological imperative exists which will insure widespread adoption and diffusion of labor-management innovations that have economic merit. This, however, is not an accurate depiction of the diffusion and institutionalization across the economy of economic and social changes in general, (Lewin, 1948; Mansfield, 1968; Nelson and Winter, 1982) and human resource practices in particular (Kochan and Cappelli, 1984; Jacoby, 1985; Baron, Dobbin, and Devereaux, 1986). The more common pattern is for experimentation to occur in leading firms in response to external or internal pressures, followed by a period of debate, evaluation, and resistance in which various obstacles to further diffusion are identified. Diffusion then tends to follow a discontinuous pattern as a function of the interaction of pressures from labor and product markets, unions, and government policy. Diffusion can be facilitated by the development of networks of professionals knowledgeable in and supportive of the new practices. This pattern has been documented for practices as varied as collective bargaining, modern personnel or internal labor market policies, grievance procedures, and equal employment opportunity policies (Kochan and Cappelli, 1984; Jacoby, 1985; Baron, Dobbin, and Devereaux, 1986).

The workplace innovations discussed in this report are now well into this second phase of the change process. They have followed the familiar historical pattern of gaining interest in selected units within large firms and unions only to be slow to diffuse both within and across organizations (Walton, 1975; Cammann, Lawler, Ledford, and Seashore, 1984; Kochan and Cutcher-Gershenfeld, 1988). In this section, therefore, we turn to a discussion of the obstacles to further diffusion that have been identified in research to date and to a discussion of the role of management and labor strategies for overcoming them. Discussion of the role of government in the diffusion process is reserved for the final section of this report. We will focus on factors that affect diffusion across the economy and leave the analysis of barriers to diffusion within firms to the paper being prepared for the Commission by Strauss and Levine.

The Role of Competitive Strategies

One important reason that there is no natural set of market forces to insure widespread adoption and diffusion of these workplace innovations is that firms have a variety of competitive strategy options to choose from when confronted with intensified competition (Kochan, McKersie, and Cappelli, 1984; Cappelli, 1985). One response is to leave the market to lower-cost producers and to reallocate resources to other uses. Another is to attempt to retain market share by aggressively cutting costs. A third strategic response is to identify new ways to compete, for example, by emphasizing quality, product differentiation, and new product development. In reality, most firms engage in some combination of all of these responses to intensified competition. However, which of these is the dominant response will have a marked effect on employer interest in and/or long term support for the workplace innovations discussed in this paper.

Firms that respond to competitive pressures by abandoning the market or by primarily emphasizing short-run cost reductions will not see it as in their interest to encourage employee participation, work redesign, or to introduce new technology in ways that maximizes employee input and control. On the other hand, strategies that emphasize product and/or service quality, market differentiation, rapid and flexible adaptation to changing customer preferences do require a highly skilled, flexible, committed, and cooperative workforce. Likewise, employees will not respond with high levels of participation, flexibility, and cooperation with management unless they see the competitive strategies being adopted as consistent with their long-run interests. Thus, the scope and pace of diffusion of workplace innovations in part will depend on the mix of competitive strategies that are adopted by American firms in response to global and domestic competitive pressures.

Technology Strategies

Like overall business and competitive strategies, technology strategies can either reinforce or undercut the full development and utilization of human resources. Firms that invest in new technology simply to reduce headcount or to gain greater control over labor are not only likely to discourage employee participation and support, they are also likely to experience significant negative reactions from their workforce. Chalykoff (1988), for example, has shown that the when the monitoring features of information technology are used as a control device they produce lower job satisfaction and higher turnover than when the same monitoring capabilities are used to provide employees with feedback and technical assistance. Thus how a technology is used and introduced will have a significant effect on firm and employee performance.

Thomas' (1988) study of technological change showed that significant changes in organizational structures, decision-making processes, and the distribution of power will be needed if human resource and work organization issues are to be integrated with the design of new technologies or production processes. These are not changes that will flow automatically from the generic nature of the technology but instead require conscious decisions and choices on the part of the firm and changes in the structure of labor-management relations.

Specifically, Thomas (1988) and others (Walton, 1982; Kochan, Katz, and McKersie, 1986) argue that to link successfully human and technical dimensions of technological change will require involvement of employees and/or their representatives with engineers and design specialists in all three stages of the technological change: (1) the development stage when key design choices are made and their effects on human resource and organizational practices are identified; (2) the resource allocation stage when scarce dollars and R&D staff are allocated across competing projects and performance benchmarks and payback criteria are set, and; (3) the deployment stage when new systems are implemented and modified in marginal ways over time.

The early attention to human resource issues is unlikely to occur if top executives and public policy makers continue to see expenditures in R&D as investments in new hardware that will substitute capital for labor or as a means of asserting greater control over workforce behavior. It also will not occur if human resource management professionals and labor representatives lack sufficient technical knowledge to add value to the analysis and decision-making in the early design and resource allocation stages of technological decision-making. Early attention to these issues will also not occur if labor leaders attempt to retain their traditional role of remaining outside of early consultation and involvement in order to protect their right to protest or grieve the prior decisions as their impacts on the workforce become visible during the implementation process. Thus, widespread diffusion of workplace innovations will require significant departures in technology strategies and in the structures and processes by which new technology is developed and deployed.

Union Leadership Strategies

So far we have focused largely on changes in employer strategies, structures, and internal processes needed to promote diffusion of workplace innovations. In non-union settings, these are the primary factors accounting for the success or failure of these various reforms. In unionized settings, however, diffusion is highly dependent on the willingness of labor leaders to become more vocal and active champions of them and devote the resources needed to be skilled in their promotion and implementation. As is well known, there continues to be deep debate among union leaders over the merits and pitfalls of supporting employee participation, work redesign, and/or participation with management in technology planning.

As long as labor leaders remain ambivalent or equivocal on these issues one of two things will continue to happen. In some cases where employers are convinced these innovations are needed to be competitive, they will attempt to introduce them without active union support or involvement. Already there is evidence that some employers have been able to impose changes in work organization and technology in the face of direct union opposition (Cutcher-Gershenfeld, McKersie, and Walton, 1989). In other cases opportunities to consider the first strategy may be foregone for lack of anyone calling for employee input into these choices and strategies.

There is evidence to suggest that, contrary to current stereotypes, unions and collective bargaining can serve as powerful institutionalizing forces. Drago (1988) has shown that the presence of a union increases the probability that employee participation will endure over time. Our own case studies of workplace innovations (Kochan and Cutcher-Gershenfeld, 1988) identified various pivotal events where the absence of union support would have led to the abandonment of an employee participation effort. The Thomas (1988) and Henderson (1988) studies of the role of users in the design and introduction of new technology both suggest that successful involvement will require the development of new skills and technical knowledge on the part of union representatives. Union leaders are unlikely to invest in the development of these skills unless they become standard techniques for representing their members. This will only happen if labor becomes a visible and vocal champion of these innovations. Thus, as with previous personnel and labor relations innovations, the diffusion of these workplace innovations will depend on the extent to which the labor movement embraces them and gives them priority in its internal leadership development programs, in collective bargaining, and in its legislative agenda.

The National Labor-Management Relations Climate

At the same time the 1980s has been a decade of accelerated innovation in workplace practices, it has also been a period of increasing tension and conflict in labor-management relations. Employer opposition to union organizing has intensified, union membership continued to decline steadily, real wages remained stagnant, and while the number of strikes declined many of those that occurred escalated into hard fought struggles for survival of the company and/or the union. Thus, the workplace innovations discussed in this report are taking place in an environment where the adversarial tensions between labor and management in American society appear to be escalating toward a crisis. This larger adversarial climate puts the fate of any single workplace innovation at risk and stands as a major obstacle to both widespread diffusion and institutionalization since the very basic requirements of trust, legitimacy, and institutional security needed to support cooperative behavior, risk taking, and innovation between two parties are absent. Thus, concern for diffusion of workplace innovations cannot be separated from concern over the future of broader industrial relations policy and practice. Addressing the connections between these two issues is a key task for public policy makers.

PUBLIC POLICY IMPLICATIONS

If the 1980s can be thought of as a time of private experimentation with workplace innovations, we would argue that it is time to move beyond an experimental stage. Overcoming the obstacles to further diffusion will require a more active and supportive public policy. The question therefore is: What broad principles and concrete actions should guide public policy efforts to promote and support diffusion and institutionalization of workplace innovations? We will focus on four interrelated policy initiatives: (1) providing a national data base for measuring the diffusion of innovative practices and evaluating their economic and social consequences; (2) updating labor law to both remove the barriers to labor management cooperation and innovations and to endorse and promote these innovations as part of our national labor policy; (3) integrating support for workplace innovations with broader human resource, labor market, and economic policies, and; (4) providing the political leadership needed to produce a positive climate within which innovative labor-management relations can flourish.

Information and Data

As our review suggests, all the evidence available to date on workplace innovations comes from ad hoc case studies or privately collected survey data on limited, non-random samples. Not only does this limit the generalizability of the findings and results of these studies, it also limits our ability to estimate the scope and rate of diffusion of new practices. Thus there is no reliable estimate of the extent to which employee participation or work redesign principles have diffused across the American workforce. Nor is there a national data base that can support evaluation of the relationships between participation and workplace innovations, other human resource practices, labor market behavior, and the economic and social outcomes of interest to public policy makers. This is a particularly serious shortcoming given the "integration" hypothesis that is advanced in this paper. That is, our review of the evidence suggests that the potential benefits of employee participation and related workplace innovations depend on the extent to which competitive strategies, technology policies, and other organizational practices reinforce and support these innovations. Thus, the data base needed to fully evaluate this hypothesis must combine data on individual attitudes and behaviors with this broad array of organizational practices and policies.

A first step toward informed policy making in this area would be the development of a national longitudinal sample of individuals and establishments with data on the nature of workplace practices and performance outcomes of central interest to individuals, employers, unions, and policy makers. This would be a natural extension of the government's traditional monitoring and evaluation role. Such a data base would need to include both individual worker attitude and demographic data and establishment data on work practices, labor-management relations and related human resource practices, production policies, technology and business strategies, and performance outcomes (productivity, quality, safety, absenteeism, etc.). To achieve maximum benefits the survey would need to be repeated on a regular basis, preferably annually or biannually.

The conceptual and research design issues for such a national data base have already been discussed in a Social Science Research Council report commissioned by the Department of Labor (Kallenberg, 1986). The Council was asked to assess the value in conducting a fourth round of the Quality of Employment Survey, a national survey of employee attitudes commissioned by the Department of Labor in 1969, 1973, and 1976. The Council concluded that a new data base on "America at Work" was needed:

> In response to the need for information on recent and ongoing dynamic changes in the American labor force and economy, the Social Science Research Council's Advisory Group on a 1986 Quality of Employment Survey recommends that new surveys of employees and employers be initiated. These surveys should meet several goals: (1) information should be obtained form a large random sample of the nation's employed labor force,; (2) information should also be

> collected from a national sample of companies and public-sector employers; (3) organizational data should be linked to the information obtained from employees; (4) information should be obtained from a sample of employees within each of the organizations sample; and (5) the surveys should be designed as panel studies.

The survey of "America at Work" called for in this group's report would provide exactly the data needed to support informed policy making and evaluation in this area.

Labor Law

A detailed examination of the relationship between labor law, labor management cooperation, and workplace innovations is provided in another paper being prepared for this Commission and, therefore, we need not discuss these issues in detail here. Instead, we suggest two broad principles for guiding the updating of labor law to promote these innovations.

First, the fundamental principle of labor law--providing individual workers the ability to organize free of coercion on the part of employers or unions must be achieved in practice and perceived to be achieved and fair by workers, union representatives, and managers. At present there is growing evidence that the combination of delay in getting to an election and certifying its results, aggressive employer legal and illegal resistance to organizing efforts, and the difficulty experienced in negotiating first contracts all are frustrating workers and union representatives, undermining confidence in the fairness of the law and its administration, and heightening labor-management tensions. Our reading of the evidence on these matters convinces us that the current law is not adequately implementing this fundamental principle.

Therefore, an updating of labor law and/or its administration is warranted on these grounds alone.

But we have a particular reason for believing that these issues need to be addressed. Union representatives constantly note that their frustration with the current law and its administration is a serious barrier to union support for labor management cooperation and innovation at the workplace. It is politically difficult for union leaders to champion cooperation and innovation in the organized facilities of an employer when they face resistance from the same employer to organizing workers in new or other unorganized facilities. Cooperation in such a case is perceived by workers and union representatives as helping to generate resources through improved performance in the unionized facility that are then siphoned off to grow the nonunion operation(s).

Regardless of how parties in any specific relationship respond to this mixed managerial policy of encouraging worker and union input and cooperation in currently unionized facilities while simultaneously seeking to avoid unions in any new or growing establishments, such a policy has adverse consequences for the macro-economy and society. If played out to an extreme in a dynamic economy where structural change is critical to economic advancement, such as policy will lead to a continuous decline in unionization and ultimately will threaten the institutional security of the labor movement. Support for innovation and cooperation is hardly likely to be forthcoming from any organization that is fighting for survival and is denied legitimacy by the party seeking its cooperation. Thus, fixing the flaws in current labor law is a necessary, but as we will suggest below, not a sufficient condition for updating labor law to promote workplace innovation.

The second principle that needs to be embedded in an updated labor law suitable for promoting diffusion and institutionalization of workplace innovations is that more flexible forms of participation and representation than those provided under current collective bargaining law need to be explicitly endorsed and encouraged. Current law endorses principles of exclusive representation and bilateral bargaining for the non-supervisory workforce. There are two basic problems with this as the sole form of worker participation/representation encouraged and protected as part of our national labor policy.

The first problem is that the line between supervisory and non-supervisory workers is becoming increasingly blurred as innovations lead to the delegation to rank and file workers or work groups of traditional "supervisory" responsibilities (e.g., scheduling, directing, evaluating employee performance, recommending or authorizing personnel actions such as hiring, promoting, disciplining, and/or terminating employees, etc.). Moreover, by drawing a tight line of demarcation between two classes of employees, a large and perhaps increasing number of supervisors, middle managers, and executives are left with no legal rights to participate or be represented in participatory decision-making processes. Nor can they exercise any legal protection for asserting their interests if they are involved in such processes. Thus, a large number of employees who are critical to the success of workplace innovations are currently legally disenfranchised and unprotected under national labor law.

A second dimension to the problem with current law is that requirement for exclusive representation and duty to bargain to impasse restricts participation and representation to a very specific indirect form -- one that is based on an adversarial set of principles but fails to support cooperative problem solving or to support the range of participatory processes underway in the most innovative employment relationships. Thus, we would favor updating labor law to allow for a variety of non-exclusive participation councils that are broadly representative of the entire hourly, salaried, and managerial workforce and that are encouraged to discuss any human resource issue of mutual concern. These human resource advisory councils should not replace or interfere with exclusive bargaining rights for groups that hold or seek to achieve this status but should serve as a supplement to collective bargaining and exclusive representation.

The primary role of these councils would be to champion and promote the integration of human resource policy into corporate strategies, technology policies, and other long run decisions. As such these bodies would serve as an American version of the works councils found in Germany and several other European countries. Because council membership would be representative of the full range of occupational and functional groups found within an organization, they might also serve an internal grievance and arbitration role for employees who believes their rights have been violated. In this way a minimum level of empowerment would be provided to all employees regardless of whether or not they are formally represented by a union.

Other forms of representation not anticipated by conventional labor law might also be encouraged and endorsed. For example, although employees have gained representation on corporate boards of directors in a small number of unionized U.S. firms as a quid pro quo for wage concessions and/or as part of employee stock ownership programs, neither corporate nor labor law recognize employees as legitimate stakeholders whose vital interests are affected by the issues and decisions normally taken up by board members. Even board members nominated by employees in ESOP companies are bound by their fiduciary responsibilities to shareholder interests which at times can conflict with employee interests. Recognizing employees as stakeholders with legitimate interests in these affairs and providing a role for their articulation at the highest level of corporate decision-making will therefore require reform of both labor law and the legal doctrines controlling corporate governance. The goal of these legal reforms would not be to choose the optimal new institutional form for employee participation. Indeed, this would be a futile exercise given the diverse nature of employment relationships found in today's economy. Instead, the goal is to open up both the law and practice to further experimentation with various means of institutionalizing an on-going commitment to human resource issues in the strategic planning and decision-making and the operational day to day management of American firms.

These proposed changes are part of a debate over the future of American labor law that is just getting under way among scholars and interested practitioners (cf. Kochan, Katz, and McKersie, 1986; Hechscher, 1987; Kochan and McKersie, 1988; Weiler, forthcoming). It is important to note here that the outcome of this debate will have an important bearing on the prospects for diffusing and institutionalizing the innovations assessed in this report. In short, the need for innovation at the workplace should play a prominent role in these debates.

Integration with other Human Resource and Economic Policies

In the past employee participation specifically, and too often, labor policy in general, have been viewed and debated as stand alone or special interest policy issues and have not been seen as an integral component of national economic, human resource, or social policy. This must change if workplace innovations are to help achieve the steady and continuous improvements in productivity, product quality, and capacity to innovate required for a competitive economy. If the integration hypothesis advanced in this paper is correct, then these micro economic objectives cannot be achieved without the a highly participative, motivated, flexible, and cooperative workforce and labor management relationship. Thus, diffusion of workplace innovations must be viewed as an integral part of the nation's long term economic and human resource strategy and policy.

The work of this Commission offers an important opportunity to join analysis of workplace innovations with planning for other labor market and human resource development policies. Improvements in the quality and performance of education, training, and labor market adjustment institutions are essential to achieving the labor force quality required for the future. The workplace innovations reviewed here are likewise required to insure that these skills and abilities are fully utilized in organizations of the future.

National Leadership

Finally, diffusion of these innovations is not likely to occur in the absence of strong national leadership and commitment of financial resources needed to build support for and disseminate information about these innovations. Currently, the strongest champions with resources available to support these innovations in the federal government are found in the Department of Labor's Bureau of Labor Management Relations and Cooperative Programs and the Federal Mediation and Conciliation Service program for funding labor management committees under the Labor Management Cooperation Act of 1978. The combined budgets of these two units are less than $10 million. Two changes will be needed to give adequate support to these initiatives.

First, workplace innovations must become a priority of elected and appointed officials across a broader array of government bodies. The President, cabinet members who share responsibility for economic and human resource policy and leaders in Congress need to become champions of these issues if the adversarial tensions between labor and management are to be reversed and top executives are to be convinced that employee participation and labor management cooperation are important national objectives.

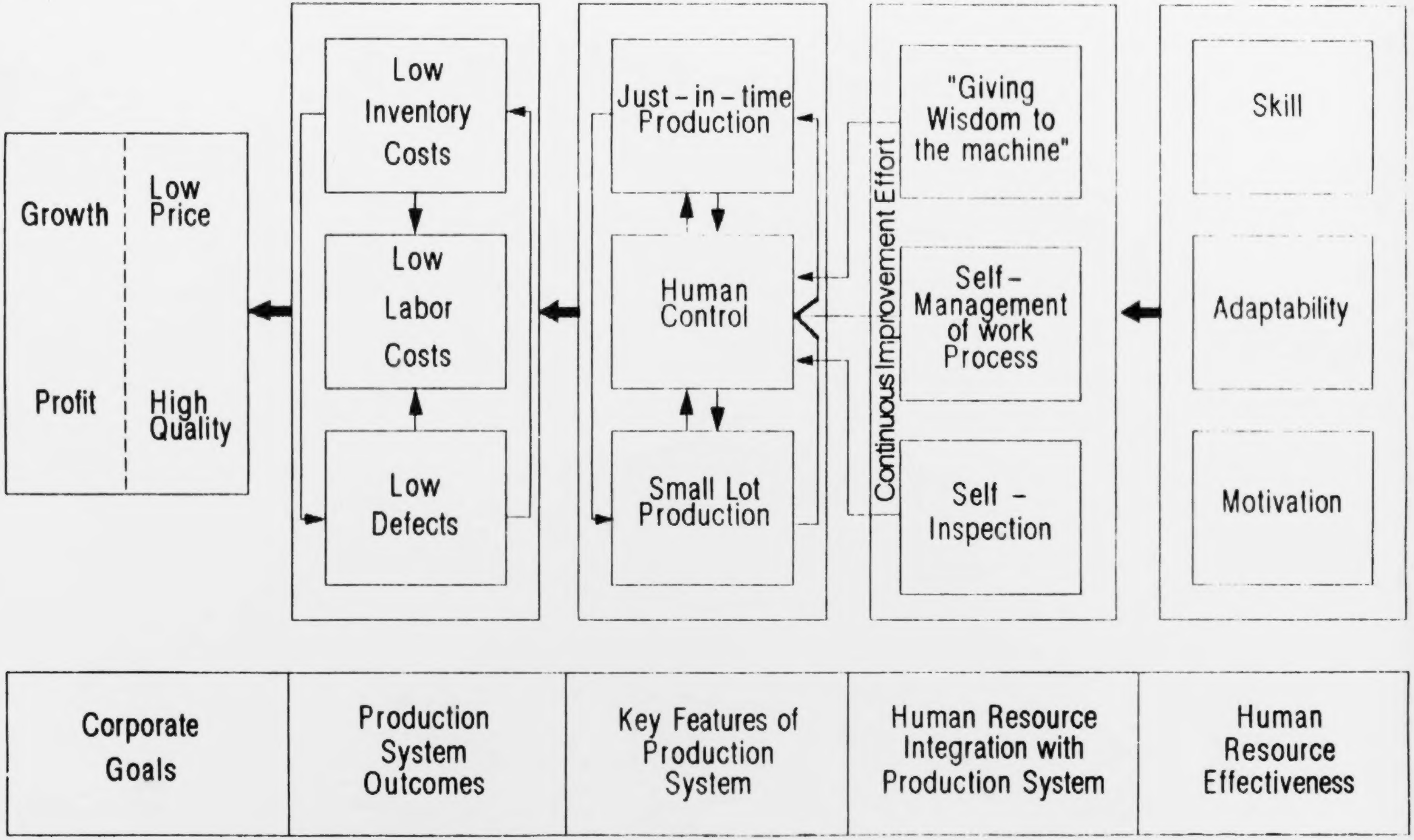
Second, financial support for these efforts must be increased substantially from their current levels. Adequate support is unlikely to be forthcoming in the absence of a Congressional mandate and program to promote further experimentation, evaluation, and diffusion of workplace innovations. Thus changes in current labor legislation or employment policy should include a specific budget and assignment of administrative responsibility for these activities. Further research and dissemination of information and the building of professional networks among individuals experienced in introducing and managing participation and innovation are all necessary components of a national strategy for overcoming the obstacles to workplace innovations and supporting their diffusion and institutionalization.

In the absence of a strong national policy and diffusion strategy we are likely to see significant support for workplace innovations in a limited number of states. A handful of states such as New York, Michigan, Ohio, Wisconsin, and Massachusetts are attempting promote workplace innovations through a variety of efforts. In Michigan, for example state programs support such varied efforts as development and dissemination of new industrial technology suitable for small employers, technical assistance in designing employee participation efforts in small enterprises, direct assistance to community labor- management committees, technical assistance in the design of gain sharing programs and employee ownership, and support for joint labor-management approaches to worker dislocation and employment adjustment, and various programs to create access to venture capital for small or emerging businesses. While such state level initiatives are encouraging, if past patterns of social policy innovation are a guide, only a small number of states are likely to develop such comprehensive efforts. Thus, there is no substitute for a national policy.

Ultimately, America's competitive success will depend in large part on business strategies that emphasize quality and flexibility, which in turn, require an integrated treatment of employee participation, workplace redesign and new technology. Yet knowledge of the need for integration alone is not sufficient to overcome the many social, institutional, and legal barriers that now exist. We believe that a national data base is needed to evaluate the effects of different types of innovation and to track these developments in private practice. In addition changes in national policy and leadership will be needed to diffuse these practices to a broad enough number of employment relationships for them to contribute to our national economic and social welfare.

FIGURE 1

"HUMANWARE": THE JAPANESE MODEL


Growth
Low Price
Profit
High Quality
Low Inventory Costs
Low Labor Costs
Low Defects
Just-in-time Production
Human Control
Small Lot Production
Continuous Improvement Effort
"Giving Wisdom to the machine"
Self-Management of work Process
Self-Inspection
Skill
Adaptability
Motivation
Corporate Goals
Production System Outcomes
Key Features of Production System
Human Resource Integration with Production System
Human Resource Effectiveness

Source: H.Shimada and J.P. MacDuffie

REFERENCES

Alper, William S., B. Pfau, and D. Sirota. "The 1985 National Survey of Employee Attitudes Executive Report." Sponsored by Business Week and Sirota and Alaper Associates, September, 1985.

Attewell, Paul. "Big Brother and the Sweatshop: Computer Surveillance in the Automated Office." Sociological Theory 5(1987): 87-99.

Baron, James N., Frank R. Dobbin, and P. Devereaux. "War and Peace: The Evolution of Modern Personnel Administration in U.S. Industry." American Journal of Sociology 92(1986): 350-383.

Blauner, Robert. Alienation and Freedom. Chicago: University of Chicago Press, 1964.

Cammen, Cortlandt, Edward E. Lawler III, Gerald E. Ledford, and Stanley E. Seashore. Management-Labor Cooperation in Quality of Worklife Experiments. Washington, D.C.: U.S. Department of Labor, 1984.

Cappelli, Peter. "Competitive Pressures and Labor Relations in the Airline Industry." Industrial Relations 24(1985): 316-38.

Chalykoff, John. "Computer-Aided Monitoring: Employee Responses to Knowledge of when they are Being Monitored." Conference on Employee Rights and Responsibilities, Virginia Beach, VA, October 13-14, 1988.

Collective Bargaining Forum. New Directions for Labor and Management. Washington, D.C.: U.S. Department of Labor, 1987.

Cuomo Commission Report on Trade and Competitiveness. The Cuomo Commission Report. New York: Simon and Schuster, 1988.

Cusamano, Michael. The Japanese Automobile Industry: Technology and Management at Nissan and Toyota. Cambridge, MA: Harvard University Press, 1985.

Cutcher-Gershenfeld, Joel. "Tracing a Transformation in Industrial Relations: The Case of Xerox Corporation and the Amalgamated Clothing and Textile Workers Union." Washington, D.C.: U.S. Department of Labor, 1988.

Cutcher-Gershenfeld, Joel. "Industrial Relations and Economic Performance: Assessing a Transformation in Labor-Management Relations." Mimeo, Michigan State University, 1988.

Cutcher-Gershenfeld, Joel, Robert McKersie, and Kirsten Wever. "The Changing Role of Union Leaders." Washington, D.C.: U.S. Department of Labor, 1988.

Cutcher-Gershenfeld, Joel, Thomas Kochan, and Anil Verma. "Recent Developments in U.S. Employee Involvement Initiatives: Erosion or Transformation," in Advances in Industrial Relations. Greenwich, CT: JAI Press, forthcoming.

Cutcher-Gershenfeld, Joel, Robert McKersie, and Richard Walton. "Dispute Resolution and the Transformation of U.S. Industrial Relations: A Negotiations Perspective" in Proceedings of the Spring Meetings of the IRRA, 1989. Madison: IRRA (1989).

Cyert , Richard M. and David C. Mowery, (eds). Technology and Employment. Washington, D.C.: National Academy Press, 1986.

Dertouzos, Michael, Robert Solow, and Richard Lester. Made in America. Cambridge: MIT Press, forthcoming.

de Schweinitz, Dorothea. Labor and Management in a Common Enterprise. Cambridge, MA: Harvard University Press, 1949.

Dougherty, Deborah J. "New Products in Old Organizations: The Myth of the Better Mousetrap in Search of the Beaten Path." Ph.D. thesis. Sloan School of Management, M.I.T., 1987.

Douglas, Paul. "Shop Committees: Substitute for, or Supplement to, Trade Unions?" The Journal of Political Economy, (February 1921).

Drago, Robert. "Quality Circle Survival: An Explanatory Analysis." Industrial Relations, 1988.

Emery, Fred and Thorsrud, Einar. Democracy at Work. Leiden, Netherlands: Martinus Nijhoff, 1976.

Ephlin, Donald F. "Revolution by Evolution: The Changing Relationship between GM and the UAW.," In Academy of Management Executive, 2, 1988, 63-66.

Forester, Tom (ed). The Information Technology Revolution. Cambridge, MA: M.I.T. Press, 1980.

Gershenfeld, Walter. "Employee Participation in Firm Decisions." In Human Resources and the Performance of the Firm: IRRA Annual Volume, 1987. Madison, WI: Industrial Relations Research Association, 1987.

Gomberg, William. "Special Study Committees." In John Dunlop and Neil Chamberlain (eds.) Frontiers of Collective Bargaining. New York: Harper and Row, 1967.

Goodman, Paul. Assessing Organizational Change: The Rushton Quality of Work Experiment. New York: Wiley & Sons, 1979.

Hackman, J. Richard. "Sociotechnical Systems Theory: A Commentary." In Van de Van, A. and Joyce, W. (eds.) Perspectives on Organization Design and Behavior. New York: Wiley, 1982.

Hackman, J. Richard and Greg Oldham. Work Redesign. Reading, MA: Addison Wesley, 1980.

Hearings on H.R. 2596 before the Subcommittee on Economic Stabilization of the Committee on Banking, Finance and Urban Affairs of the U.S. House of Representatives, March 24, March 31, and April 5, 1977.

Heckscher, Charles. The New Unionism. New York: Basic Books, 1987.

Henderson, John C. "Involvement as a Predictor of Performance in I/S Planning and Design." MIT Sloan School of Management Working Paper #88-55, Management in the 1990s Project, 1988.

Hirschorn, Larry. Beyond Mechanization. Cambridge, MA: M.I.T. Press, 1985.

Hulin, Charles and Milton R. Blood. "Job Enlargement, Industrial Differences, and Worker Responses, Psychological Bulletin, 69 (1968): 41-55.

Ichniowski, Casey, David Lewin, and John Delaney. The New Human Resource Management at the Workplace." Paper presented at the First Regional Congress of the Americas, International Industrial Relations Associations, Quebec City, August 24, 1988.

Jacoby, Sanford. "Union-Management Cooperation in the United States: Lessons from the 1920s." In Industrial and Labor Relations Review, Vol. 37, No. 1, October, 1983.

Jacoby, Sanford. Employing Bureaucracy: Managers, Unions, and the Transformation of Work in American Industry. New York: Columbia University Press, 1985.

Kallenberg, Arne. America at Work: National Surveys of Employees and Employers. Report to the U.S. Department of Labor, 1986.

Katz, Harry C., Thomas A. Kochan, and Mark Weber. "Assessing the Effects of Industrial Relations and Quality of Working Life on Organizational Performance." Academy of Management Journal 28(1985): 509-27.

Katz, Harry C., Thomas A. Kochan, and Kenneth Gobeille. "Industrial Relations Performance, Economic Performance, and Quality of Working Life Efforts", Industrial and Labor Relations Review 37(1983): 3-17.

Katz, Harry C., Thomas A. Kochan, and Jeffrey Keefe. "Industrial Relations and Productivity in the U.S. Automobile Industry", Brookings Papers on Economic Activity 3(1988): 685-715.

Klein, Janice. "The Changing Role of First Line Supervisors and Middle Managers." Washington, D.C.: Brookings Institute, 1988.

Kochan, Thomas A. and Peter Cappelli. "The Transformation of the Industrial Relations and Personnel Function." In Osterman, Paul (ed.) Internal Labor Markets., Cambridge, MA: M.I.T. Press, 1984.

Kochan, Thomas A. and Joel Cutcher-Gershenfeld. "Institutionalizing and Diffusing Innovations in Industrial Relations." Washington, DC: U.S. Department of Labor, 1988.

Kochan, Thomas A., Harry C. Katz, and Robert McKersie. The Transformation of American Industrial Relations. New York: Basic Books, 1986.

Kochan, Thomas A., Harry Katz, and Nancy Mower. Worker Participation and American Unions: Threat or Opportunity? Kalamazoo, MI: Upjohn Institute for Employment, 1984.

Kochan, Thomas A. and Robert B. McKersie. "Future Directions for Labor and Human Resource Policy." Paper presented at the first regional conference of the Americas, International Industrial Relations Association, Quebec City, August 24, 1988.

Kochan, Thomas A., Robert B. McKersie, and Peter Cappelli. "Strategic Choice and Industrial Relations Theory." Industrial Relations 23(1984): 16-39.

Kossek, Ellen. "The Acceptance of Human Resource Innovations by Multiple Constituencies." In Personnel Psychology, forthcoming.

Krafcik, John F. "The Triumph of the Lean Production System" Sloan Management Review 30 (1988): 41-52.

Krafcik, John F. and John Paul MacDuffie. "Explaining High Performance Manufacturing: The International Automotive Assembly Plant Study." International Policy Forum, International Motor Vehicle Program, MIT, May 1989.

Lawler, Edward E. and Susan A. Mohrman. "Quality Circles after the Fad." Harvard Business Review 63(1985): 65-71.

Lee, Bruce. "Worker Harmony Makes NUMMI Work." New York Times, December 25, 1988.

Lewin, David, Casey Ichniowski, and John K. Delaney. "Human Resource Policies and Practices and Economic Performance of U.S. Business." Annual Meeting IRRA, December, 1988, New York City.

Lewin, Kurt. Resolving Social Conflict: Selected Papers on Group Dynamics. New York: Harper, 1948.

Loveman, Gary W. "An Assessment of the Productivity Impact of Information Technology." MIT Sloan School of Management Working Paper #1988-054, Management in the 1900s Project, 1988.

MacDuffie, John Paul and Thomas Kochan. "Human Resources, Technology, and Economic Performance: Evidence from the Automobile Industry", paper delivered at Annual Meeting of Industrial Relations Research Association, December 28, 1988, New York.

Mahoney, Thomas A. "From American to Japanese Management: The Conversion of a Tire Plant." Owen Graduate School of Management, Vanderbilt University, Working Paper #88-14, 1988.

Mansfield, Edwin. The Economics of Technological Change. New York: Norton Press, 1968.

Marshall, Ray. Unheard Voices. New York: Basic Books, 1987.

Nelson, Richard, R. and Sidney G. Winter. An Evolutionary Theory of Economic Change. Cambridge, MA: Harvard University Press, 1982.

New York Stock Exchange. People and Productivity: A Challenge to Corporate America. New York: New York Stock Exchange, 1982.

Parker, Michael and Jane Slaughter. Choosing Sides. Boston, MA: South End Press.

Piore, Michael and Charles Sabel. The Second Industrial Divide. New York: Basic Books, 1984.

President's Commission on Industrial Competitiveness. Global Competition: The New Reality. Washington, D.C.: Government Printing Office, 1985.

Roach, Suzanne S. America's Technology Dilemma: A Profile of the Information Economy. Morgan Stanley Special Economy Study, New York, 1987.

Roethlisberger, Fritz. Management and Morale. Cambridge, MA: Harvard University Press, 1941.

Rosenberg, R. and E. Rosenstein. "Participation and Productivity: An Empirical Study." In Industrial and Labor Relations Review, Vol. 33, No. 3, April, 1980.

Schwab, Donald P. and Larry L. Cummings. "Theories of Performance and Satisfaction: A Review." Industrial Relations, 9 (1970): 408-30.

Shimada, Haruo and MacDuffie, John Paul. (1986). "Industrial Relations and 'Humanware': Japanese Investments in Automobile Manufacturing in the United States." Working Paper, Sloan School of Management, M.I.T., 1986.

Thomas, Robert J. "Technological Choice: Obstacles and Opportunities for Union-Management Consultation on New Technology," MIT Sloan School of Management Working Paper #1987-88, 1988.

Trist, Eric. "The Evolution of Socio-Technical Systems as a Conceptual Framework and as an Action Research Program." In Van de Van, A. and Joyce, W. (eds.) Perspectives on Organization Design and Behavior. New York: Wiley, (1981): 19-75.

Trist, Eric. and K. Bamforth. "Some Social and Psychological Consequences of the Longwall Method of Coal-getting." Human Relations 4(1951): 6-38.

Walton, Richard E. "The Diffusion of New Work Structures: Explaining Why Success Didn't Take", Organizational Dynamics (Winter 1975): 3-22.

Walton, Richard E. "Establishing and Maintaining High Commitment Work Systems." In The Organizational Life Cycle. Kimberly and Miles (ed.) San Francisco: Jossey-Bass, 1980.

Walton, Richard E. Innovating to Compete. San Francisco: Jossey-Bass, 1987.

Walton, Richard E. and Robert McKersie. A Behavioral Theory of Labor Negotiations. New York: McGraw-Hill Book Company, 1965.

Walton, Richard E. "Social Choice and Development of Advanced Information Technology." Human Relations 12 (1982), 1073-84.

Weiler, Paul. The Law at Work: Past and Future of Labor and Employment Law. Draft Manuscript, Harvard University Law School, forthcoming.

Whyte, William F. Worker Participation and Ownership: Cooperative Strategies for Strengthening Local Economies. Ithaca, NY: ILR Press, 1983.

Witte, John. Democracy, Authority and Alienation in Work. Chicago: University of Chicago Press, 1980.

35b. EMPLOYEE PARTICIPATION AND INVOLVEMENT

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35b. EMPLOYEE PARTICIPATION AND INVOLVEMENT

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Workers' participation and job involvement have been topics of continuing recent interest to management, organized labor, and government policy makers. Participation has been widely advocated as helping to solve a number of serious national problems -- low quality and productivity, resistance to change, job dissatisfaction, and poor labor-management relations, among others.

Given this interest, it is understandable that there has been widespread experimentation with various forms of participation. A plausible estimate is that Quality Circles and related employee involvement schemes have been introduced in 75 percent of the Fortune 500 (E.E. Lawler, personal communication, 1989) Though something of a fad, and certainly not an organizational cure-all, formal participation schemes are likely to have -- and should have -- a lasting impact on the way many organizations work.

Why have participation schemes excited such interest? How successful have they been in practice? What problems have they faced and how might these problems be resolved? What are the policy implications -- for management, unions, and the government -- of our experience to date? These are the main questions which this paper will consider.

But first we should stress that there are many forms of participation and participation comes under many names: quality of worklife, quality circles, autonomous work groups, joint productivity groups, worker membership on company boards of directors, among others. (Other papers in this series discuss related topics including profit sharing, Employee Stock Ownership Plans (ESOPs), and producers' cooperatives.) While we will primarily be discussing formal participation schemes planned by management, we will emphasize that such schemes are likely to survive or flourish only if informal participation is already part of the culture.

Background

A brief history

In the 1920's the British Industrial Health Research Council's pioneering research (e.g., Wyatt and Langdon, 1933) showed that work could made more meaningful in ways which would increase satisfaction, productivity and quality. However, large-scale academic interest in participation dates from the famous Hawthorne-Western Electric Experiments.

Shortly afterwards a series of experiments by Lewin (e.g., 1953) and his students contributed to the belief that participatory groups were more productive than non-participatory ones, and that decisions made participatively were more likely to be implemented than those made autocratically. Other work by the Likert group at Michigan was consistent with these findings (e.g., 1961). The advantages of worker participation were widely taught in business schools.

The 1970's brought widespread national concern with "blue collar blues," in part stimulated by a strike by young workers at a Lordstown G.M. plant that was attributed to the alienating conditions of assembly line work. Some observers noted a "revolt against work," particularly among younger, better educated workers (Work in America, 1973, p. 186).

Meanwhile highly influential studies by Hackman and Lawler (1971) found that some job characteristics (such as autonomy) were closely connected with both productivity and satisfaction. Thus, they concluded, job redesign might increase job satisfaction and raise productivity. At the same time there was much interest in the U.S. in the concept of socio-technical system as developed by Trist et al. (1963) in England and Emery and Thorsrud (1969) in Norway. Abroad, this interest contributed to the introduction of autonomous work groups into the assembly lines at Volvo and Saab.

Even before this, a few progressive U.S. companies had begun to experiment with various forms of participation, finding in most cases that these had a positive impact on productivity, satisfaction, and adaptability to change (Coch and French, 1948; Morse and Reimer, 1956; Marrow, Barrows and Seashore, 1967). By the 1970's the terms job enrichment and quality of worklife (QWL) became popular, and experiments in workers' participation, began to spread to mainline companies such as AT&T (Ford, 1969), Texas Instruments (Myers, 1970) and General Foods (Walton, 1980).

Aside from AT&T, much of the early experimentation was in new non-union plants, especially in the Southwest. Unions remained generally skeptical. By 1973, however, the national agreements negotiated by the

U.A.W. and the major auto manufacturers contained provisions endorsing QWL programs. A few auto plants experimented with QWL, but widespread adoption of QWL programs in unionized plants had to wait until the recession of the early 1980's.

By the 1980's a number of centers -- both public and private -- were established to disseminate experience and skills for making participation work (Cole, 1989). These include, among others, the Bureau of Labor-Management Relations and Cooperative Programs of the U.S. Department of Labor, the Work in America Institute, the Cornell School of Industrial and Labor Relation's Program for Employment and Workplace Systems, and the American Productivity Center.

Since 1980 consultative participatory schemes such as quality circles have emerged from the experimental stage and have been increasingly adopted by industry. There has also been a modest (but steady) increase in substantive participation, such as work teams.

Why this recent popularity?

1. Interest in Japanese management has mushroomed. Various forms of participation, especially quality circles, are seen as the secret of Japanese success.

2. Influenced by books such as Peters and Waterman's In Search of Excellence (1982), American managers have shown particular attention to "organizational culture" and especially to high commitment policies designed to develop broadly trained employees who identify with the organization and who are prepared and trusted to exercise high orders of discretion. Key components of this policy are heavy investments in

human capital, substantial job security, career flexibility, and new forms of compensation.

3. In an increasing number of cases participation is required by a fast-changing technology. Though some high-technology jobs are completely routine, many new jobs require broadly trained employees who are committed to their work and prepared to exercise high orders of discretion.

4. Economic pressures -- such as the 1982 recession, increased foreign competition, and the impact of deregulation -- convinced many managers and unions that almost heroic efforts were needed to cut costs, preserve jobs and prevent bankruptcy. Participatory schemes were viewed as means of working together for mutual survival.

5. In face of imminent job loss many unions agreed to substantial concessions in wages, fringes, and work rules. As a quid pro quo for these concessions, unions often insisted that management give them greater influence in determining organizational policies, frequently through the assignment of limited managerial responsibilities to joint committees, but also through stock ownership or union representation on company boards of directors.

6. Workers are changing. They are better educated, and many have learned to expect and even demand opportunities for participation.

7. Perhaps the most important reason for the spread of participation has been management's increased efforts to increase flexibility and reduce costs. Job enrichment and autonomous work groups, in particular, help break down rigid job classifications and work rules. Further, participative schemes help elicit employees'

suggestions for making work more efficient. Saving management money -- rather than making workers happy -- has been the main purpose of most recent change.

The Theory

There have been elaborate theoretical explanations of the virtues and weaknesses of participation (e.g., Lowin, 1968; Locke and Schweiger, 1979). More relevant to this paper are the reasons why participation usually raises productivity and/or satisfaction while making better use of the workforce, stressing that it doesn't always work.

1. Participation may result in better decisions. Workers often have information which higher management lacks. Further, participation permits a variety of different views to be aired. On the other hand, workers may be less informed than managers, and the premises upon which they make their decisions may be different. Also, if decisions are made by groups, reaction to changing environments may be particularly slow.

2. People are more likely to implement decisions they have made themselves (Porter, Lawler, and Hackman, 1975). Not only do they know better what is expected of them, but helping make a decision commits one to it (Staw and Ross, 1978). On the other hand, once becoming committed to a decision, employees may be reluctant to change it.

3. The mere process of participation may satisfy such non-pecuniary needs as creativity, achievement, and social approval. On the other hand, not everyone has strong desires for creativity and achievement, or they satisfy these sufficiently off the job.

4. Participation may improve communications and cooperation; workers communicate with each other rather than requiring all communications to flow through management, thus saving management time. On the other hand, participation is time consuming.

5. Participative workers supervise themselves, thus reducing the need for full-time supervisors, and so reducing overhead labor costs.

6. Participation enhances people's sense of power and dignity. This reduces the need to show one's power through fighting management and restricting production. On the other hand, once a precedent of participation is established, withdrawal of the "right" to participate becomes difficult.

7. Participation increases loyalty and identification with the organization, especially if the group's suggestions are implemented. On the other hand, cohesive, participative groups may unite against management to restrict production and prevent change.

8. Participation frequently results in the setting of goals. There is considerable evidence that goal setting is an effective motivational technique (Latham and Yukl, 1975).

9. Participation teaches workers new skills, and helps train and identify leaders.

10. If participation takes place in a group setting, a new element is added: group pressure to conform to decisions adopted (Strauss, 1977).

11. When union and management leaders jointly participate to solve problems on a non-adversarial basis, the improved relationship may spill over to improve union-management relations.

Obviously, participation is not without its disadvantages. In addition to those mentioned above, there are costs of retraining employees and managers and, perhaps, of redesigning technology. On balance, however, the advantages of participation outweigh the disadvantages for most workplaces. Thus, participation, if properly introduced, can be a powerful tool for increasing productivity.

Forms of participation

Here we briefly describe the major forms of participation existing in the United States, reserving for a later section a description of participation in other countries. Our discussion begins with the simplest forms of participation, involving individual workers only, moves on to group participation at the workplace levels, and concludes with representative participation at the plant and organizational levels. These forms of participation are by no means exclusive, and there can be important interactions among them. (Participation in ownership and in profits are discussed in other papers in this series.)

Academics have created elaborate typologies of participation (e.g., Strauss (1982)). Typical dimensions include the level of participation (shopfloor vs. representative), the topics of participation (job design, pay, and so forth), the power of the participatory body (consultative, joint decision-making, and so forth) and the extent of worker ownership. The discussion below focuses on the most common types of participation.

Job Redesign

As we use the term here, job redesign programs involve altering the nature of the workers' assignments to give them a greater sense of involvement in their work. The main variations include job rotation, job enlargement, and job enrichment.

Job rotation. This most simple form of workplace reform permits employees to switch jobs without changing the characteristics of the job itself. Thus employees gain variety in their work and perhaps in the social relations.

Job enlargement. This approach combines tasks "horizontally." Employees are given "whole tasks" and permitted to follow a job from beginning to end.

Job enlargement may be associated with "broad banding", the combining of what were once separate job classifications. At the joint GM-Toyota plant (NUMMI) in Fremont, California all the unskilled job classifications have been combined into a single one. (While job enlargement may require broad banding, the reverse need not be true. Broad banding may merely give management greater flexibility in rotating workers from one narrow task to another).

Job enrichment. This approach goes beyond job enlargement by adding "vertical" or quasi-managerial elements, especially planning, supply, and inspection. Thus, it contributes to the employees' sense of autonomy and control over their work. For example, employees may control the speed of the machines they run and even turn these off for short periods; operators may maintain their own equipment; lab technicians may sign their own reports, rather than have bosses check them; maintenance people may decide priorities of repair tasks.

> Example: Job enrichment was applied to the work of clerks who were assembling telephone directories. Before the change, directories were assembled on a production line basis. Work was passed from clerk to clerk for a total of 21 steps, many of which were merely for verification. After the change, each clerk was given complete responsibility for assembling either an entire directory and or alphabetical part of one, thus combining 21 jobs into one. Follow up checkers were eliminated because employees were expected to check their own work for accuracy. The clerks were permitted to talk directly to advertising sales representatives to clear up ambiguity in the copy, thus bypassing their bosses. Finally, they set the deadline dates after which copy would not be accepted for the next directory issue. As a result turnover dropped, fewer errors were made, and more work was done with fewer people (Ford, 1973).

Participative Work Groups

Most of the recent discussion regarding participation has involved groups of workers dealing with workplace problems. The best known of these are quality circles and autonomous work teams.

Quality circles. Quality circles (QCs -- sometimes called job involvement programs) typically consist of small voluntary groups of employees from the same work area who meet together on a fairly regular basis to identify and solve quality, productivity, and other problems. (Typically about 25 percent of the workforce participates in such committees.) Sometimes their supervisor acts as their chair. Other times it is a staff "facilitator" or an employee. Frequently members of the group and the chair receive special training in such subjects as group dynamics and problem solving. Despite their name, QCs often deal with subjects other than quality; for example, work flow, productivity, safety, and employees' welfare generally.

> Example: A not untypical success story involved a group of assemblers in a Silicon Valley factory. The job required constant reaching and bending and was particularly difficult for shorter women. Turnover and absenteeism were high, quality of work low, and complaints of back strain frequent. The QC which was established included one member who had worked on a similar assembly line in another company. Based largely on her suggestions, the assembly line was tilted, permitting easier access. Further, instead of being required to stand, employees were given stools which were adjustable to their height and permitted easy movement with the work flow. With these and other changes, most of the original problems were eliminated.

Sometimes QCs evolve into autonomous work teams, the difference being that within defined limits autonomous work teams can implement their decisions, while QCs can only make recommendations to management.

Autonomous Work Teams. Autonomous work teams are in a sense a group counterpart of job enlargement and job enrichment, in that employees are given wide discretion to organize their own work and operate with very little supervision. Typically, these groups make their own work assignments and determine their own work routines, subject to overall workflow requirements.

Work teams have been given responsibility for developing relations with vendors, determining which operations can be handled individually and which by the group as a whole, setting work pace (perhaps fast in the morning and slow in the afternoon), training new employees, and at one company, even keeping financial records. Sometimes work team members serve in roles normally reserved for staff personnel or supervisors: chairing the plant safety committee, redesigning work equipment, or troubleshooting customers' problems. At times the job of supervisor is rotated among members of the group. When the new G.M. Saturn plant opens up, "councilors" (first-line supervisors) are to be elected by their subordinates.

> Example: The Topeka Gaines dog food plant (once owned by General Foods and now by Quaker Oats) was set up with work teams of 7 to 14 members. Activities usually handled by separate groups, such as quality control, maintenance, janitorial work, and industrial engineering became the responsibility of the group as a whole. Individual jobs were often rotated, but key decisions were made on a group basis. Initially, each employee was paid the same rate, with pay increases being given when the group decided that one of its members had picked up additional skills. The group screened new job applicants and apparently even "expelled" (discharged) poor performers (Walton, 1980).

> Example: One of the more successful recent turnabouts in American industry occurred at NUMMI, the joint GM-Toyota venture

located at a former GM plant in Fremont, California. The plant had been plagued with serious problems with drugs, absenteeism, and very poor labor relations. Employing mostly the same technology and workers as the old plant, NUMMI now has zoomed to the top of U.S. auto plants in productivity and lowest in absenteeism. Here "work teams" are responsible for planning job rotation, balancing work assignments to equalize work loads, and engaging in what the Japanese call kaizen ("continuous job improvement"). Team leaders, who remain union members, are selected on the basis of recommendations of joint union-management committee.

Representative Committees

By contrast with the workplace participative groups just discussed, representative committees deal with issues involving more than a single department. The employee members of such committees are elected or appointed to speak for the larger body of workers. Such committees exist in both union and non-union sectors, although they are typically less influential in the non-union sector.

Joint union-management committees were fairly common in American industry well before the concession-bargaining era, especially during wartime and recessions, periods when labor and management objectives appear more congruent (Jacoby, 1985). Traditionally such committees dealt with matters that were considered peripheral to the main collective bargaining relationship, such as safety, training, and scrap reduction, where the interests of the parties were seen to be sufficiently alike that they could be resolved in a non-adversarial way.

Recently joint committees have proliferated, especially in the automobile industry, and they have been given more important duties. They operate at both the company and plant levels. Some of these committees deal primarily with issues affecting individual welfare.

> Example: The Labor/Management Productivity Council established by the city government of Oakland, California, and its union has considered such topics as comparable worth, physical fitness programs, employee service recognition, child care, and training. It has also worked on getting special chairs for employees working on video terminals and new equipment for parking meter checkers, as well a "stay well" program designed to encourage workers to stop smoking and improve their nutrition.

Other representative committees have been charged generally with enlisting worker ideas and energies to reduce costs, improving productivity and quality, and facilitating teamwork. For example, three joint committees were established at Xerox to study work flow problems, equipment purchases, and inventory controls respectively. Their recommendations are credited with saving 180 jobs (Klinger and Martin, 1988). In New York's Sanitation Department a joint "Labor Team", including representatives of several unions helped save over $8 million a year through granting workers' greater discretion and increasing efficiency in the truck maintenance unit (Kusnet, 1989).

Membership on company boards of directors. Union representatives have served on the boards of Chrysler and American Motors, Pan American, Eastern and Western Airlines, Wilson Foods, and several financially troubled steel and trucking firms. In addition there are employee directors (not always selected by the union) in a considerable number of

ESOP and buyout situations, as described in other papers in this series. As has been the experience in other countries (Strauss, 1982) employee directors in the U.S. have not been very important (Stern, 1988). They have been handicapped by rules keeping board deliberations confidential, thus restricting them from communicating with constituents. Directors from the shop floor lack the technical expertise to make contributions in areas such as finance. Regardless of the employee director's skill, management can usually keep key issues to employees off the board's agenda. In any case, boards, which meet as infrequently as once a quarter, may exert little real influence.

Scanlon Plan. With a 50-year history, the Scanlon Plan is the oldest of the programs discussed here. Joining participation with gain sharing, the Plan represents an effort to elicit employee ideas for increasing productivity through combining direct and indirect participation with financial incentives.

The typical plan provides for shop floor "production committees" (much like QCs) which meet periodically to discuss suggestions from individual employees and to formulate general plans for improving productivity. Rejected suggestions or suggestions that affect the plant as a whole are referred to plant-wide "screening committees" which include top management as well as employees and union leadership. Savings due to increased productivity are shared by employees and company. Since bonuses are paid on a plant-wide basis, success of the plan depends heavily on the development of cooperative relationships among all the employees, line managers, and staff in the plant.

Participation in other countries

The U.S. was a relative late comer in the participation field. Workplace participation became common in Scandinavia and the Netherlands over 15 years ago. Though actually an American invention, quality circles had their first widespread use in Japan. Currently, at least 20 percent of Japanese workers regularly participate in QC-type activities (Cole, 1989).

Works councils, required by law in most Western European countries for middle and large size companies, typically are directly elected by employees. In France these councils function mainly in the health, welfare, and safety areas. In most nations management is required to consult with these councils on many issues, while in some cases management cannot move ahead without the council's approval.

Worker and/or union representatives serve on company boards of directors in many European countries. Worker representatives are almost everywhere in the minority. Nevertheless, in some cases they have considerable influence on broad policies. In West German coal and steel industries, labor and management are equally represented on the board, with a neutral third party breaking the rare deadlocks.

Union-management joint consultative committees are common in Japan. In some companies these committees engage in traditional collective bargaining. In other companies the bargaining and consultative functions are kept separate. Quite often management shares confidential information with these committees, including details of major new investments and changes in policy. Further, management normally revises its plans when faced with strong union objections (Morishima, in press).

Worker owned and controlled producers' cooperatives are fairly common in Europe and Israel, with the most famous being the Israeli kibbutzim. Employees in Yugoslavia elect works councils, which in turn select management (though with some constraints). Among the most successful worker owned and controlled organizations is the Mondragon complex in Spain. This is a loose rapidly-growing federation of companies (with employee-elected directors) and associated educational and financial institutions.

Why has participation become so common overseas? The reasons vary. In many cases it is political or ideological. Participation has been introduced to further national goals (as in Yugoslavia), to reduce union-management tensions (Germany), and to substitute for scarce management (Yugoslavia). In Sweden the motivation was partly economic as well as ideological: with full employment workers were unwilling to work on traditional assembly lines. In almost every case there was hope that participation would increase productivity.

Extent and Experience

Extent of participation. It is difficult to obtain reliable data as to the extent to which participative schemes have been introduced into American industry. In the first place, there are no standard definitions as to what is to be counted. For example, a well-publicized 1982 survey conducted by the New York Stock Exchange found that 53 percent of the firms listed on the exchange had a program using some "Employee Involvement/QWL components", but among these were "formal training and instruction" (25 percent) and "employee appraisal and feedback" (23 percent) -- useful techniques, but not what we would call "participative". Only 14 percent of these firms (22 percent in manufacturing) had QC's (Freund and Epstein, 1984).

Secondly, most reports indicate only whether a company has at least one specified program somewhere in existence. Further, a report may indicate whether a given program exists on paper, not whether it is really alive and well.

Estimates based on fairly reliable samples suggest that up to 50 percent of unionized manufacturing firms enjoy some sort of joint participative scheme, with the great bulk of these being established after 1980 (Cooke, 1987, Voos 1987). After a through survey of the data, Gershenfeld concludes "Fully operational EI/QWL are found in a minority of American organizations, but their number are increasing and may now be 10-15 percent of such organizations" (1987, p. 155).

The most that we can conclude is that experimentation with participation plans increased rapidly during the 1980's and that during this period a majority of large companies introduced these somewhere in their organization; nevertheless, functioning plans currently exist in only a fairly small minority of individual plants and offices. Further, any figures as to the number of plans may give a misleading impression as to the number of workers involved. A variety of reports suggest that it is rare for more than a quarter of the workers in any plant to take part in QCs or similar activities (e.g., Griffin, 1988; Verma, 1987).

Effects of participation. Research as to the overall success of these various forms of participation is difficult to conduct. Perhaps the most important problem is that, in a dynamic organization, it is hard to distinguish changes due to participation from changes which might have occurred anyway. Further, participation plans differ widely in their form, objectives, and environments -- making them very difficult to evaluate.

Much of the early research was based on single case studies, consultants' reports of their own successes, and anecdotal reports without quantitative data. Recently there have been an increasing number of more rigorous studies, many with careful controls, as well as some careful summaries ("meta-analysis") of the various data. Based on these some tentative conclusions are possible:

1. A majority of studies find that the introduction of shop floor participation (job redesign and participative work groups) leads to at least a short-run improvement in one or more of the following variables: satisfaction, commitment, quality, productivity, turnover, and absenteeism (Cotton et al., 1988; Griffin, 1988; Marks et al., 1986; Miller and Monge, 1986; Wagner and Gooding, 1987; Levine and Tyson, 1989). In almost no cases does participation make things worse. The changes in productivity tend to be less than changes in satisfaction and turnover (contra Cotton et al., 1988). Similar conclusions can be drawn from European data (Strauss, 1982, p. 243-44).

2. The few studies of the impacts of representative participation suggest that this form of participation alone has little influence on either satisfaction or productivity (Strauss, 1982; Cotton et al., 1988; but see Schuster, 1983; Morishima, in press). The main impact of representative participation alone may be through reducing resistance to change, improving communications and labor-management relations, and facilitating the handling of personal grievances.

3. Some limited but suggestive research suggests that shop-floor participation is unlikely to contribute to substantially increased

productivity unless such participation leads to actual "modifications in the organization of work"; that is, there must changes in job assignments, workflow, and the like. (Kochan, McKersie and Katz, 1985. For further detail see Paper 35A in this series.)

4. A major, disturbing finding is that few programs last more than four years. After a "honeymoon", they "peak and peter out" (Accordino, in press; Griffin, 1988; Cammann et al., 1984; Schuster, 1984)

In short it is reasonably clear that participation can "work" under the appropriate circumstances, but initial success is typically greater than long-run success. The main questions, then, are why is the survival rate so low; and under what circumstances will participation survive and increase performance? Our fictional account of QCs at IndCo may suggest some of the problems that participation plans encounter. We will then discuss how successful participation plans have overcome these problems.

Quality Circles at IndCo

Having heard from a friend how quality circles had reduced defect rates and increased productivity at his plant, the CEO of IndCo resolved that his own company would not be the last in the industry to adopt this new approach. Besides he understood that QCs were responsible for much of his Japanese competitors' success. More recently, he had read in Business Week how leading companies throughout the country were introducing QCs.

And so an expensive consultant was hired. On her recommendation, volunteers were recruited in each department with instructions to meet on a weekly basis to discuss problems relating to working conditions, quality, safety, and productivity. Departmental supervisors were expected to act as "facilitators" for these QCs. To equip them for this function, each supervisor received 20 hours of training in "democratic discussion leadership". ("I wish my boss would treat me," one supervisor was overhead saying, "the way I'm expected to treat my subordinates.") Meanwhile the union was carefully informed as to what management intended to do.

Some employees were quite suspicious of the plan. IndCo had always designed jobs to minimize employees' discretion, and the company had never listened to their ideas. They were not sure that IndCo was serious about listening now.

In spite of these initial handicaps, QCs in most departments were surprisingly successful at first. Many employees had been in the company for years and had accumulated a host of suggestions. Some, as simple as rotating a machine by 90°, increased production substantially at almost no cost. Employees were pleased to be listened to, after years of having no way to communicate their ideas.

In spite of QCs early success, problems began cropping up. Employees complained that their suggestions were carefully listened to, those cutting costs were accepted, but those improving safety or making work easier were ignored. Workers complained that management had used employees' ideas to increase efficiency, but was giving nothing back in exchange. At the same time, employees began contrasting the theoretically democratic process in the QCs with the continuing autocratic approach which most supervisors took on the job. After they ran through their initial set of suggestions these employees felt little incentive to offer new ones. Some groups spent increasing time on individual grievances.

Supervisors felt threatened by the process. Meanwhile, higher management's initial enthusiasm also began turning sour. From management's viewpoint many QC suggestions were half-baked and, regardless of any long-run savings, would have been quite costly to implement, at a time when cash-flow was the Number One corporate objective. In any case, management hadn't expected the process to be more than a morale builder and paid little attention to it.

Nevertheless several groups contributed ideas worth implementing. One group suggested a job rotation scheme which increased flexibility considerably. When the union heard of it, however, it protested that the scheme would violate hard-won rules preventing one employee from taking another one's job.

Employees gradually lost interest. Those who had supported the plan most enthusiastically at first became most disillusioned. Eighteen months after the plan was introduced, the company made large layoffs. A few groups continued to meet perfunctorily, accomplishing little. After 3 years the plan was essentially dead, and management was looking for a different short-cut to increasing productivity.

Problems and Possible Solutions

Our case illustrates the problems which, according to research, frequently bedevil participation. The section which follows examines these problems in greater detail and makes some suggestions as to how they might be handled. Though our solutions are advanced somewhat tentatively, unless these fundamental problems are resolved in one way or another, the chances for participation succeeding in any given situation are low.

Employee support

Employee support is the most fundamental requirement for successful employee participation. There are a variety of reasons why employees may resist participative plans.

1. Not all employees want the added responsibilities or enriched jobs that participation provides (Fenwick & Olson, 1986, p. 515; Leitko et al., 1985); many would prefer their secure routines to remain unchanged. At Xerox, for example, "88 percent of the employees valued the idea of employee participation, but only 40 percent wanted to participate via an EI problem-solving group" (U.S. BLMR, 1988, p. 11). Professionals tend to value participation more than nonprofessionals.

2. The topics about which participation is permitted may be confined to matters of only modest importance (Bradley & Hill, 1983): the color of walls, the food in the cafeteria, and so forth. In some instances, participative meetings are seen as little more than managerial pep talks, with little opportunity for employee input. Under these circumstances employees conclude that participation is a meaningless, "Mickey Mouse" exercise.

3. The problems discussed may not be resolvable at the work-place level. Instead, they may require major changes in corporate policies or substantial new investment. Employees may not have the skills or knowledge to make useful suggestions in these areas. (There is some evidence that participation tends to be more successful among

professionals and skilled trades workers -- who have skills, relevant knowledge, and discretion -- than it is among unskilled employees.)

4. Employees may fear retaliation if they make suggestions which point out areas where their supervisor has fallen down on the job, or suggest ideas that supervisors should have thought of by themselves. Consequently, employees may hesitate to make suggestions at all.

5. As suggested in the IndCo case, the democratic atmosphere of the participative group may be so inconsistent with ordinary managerial practices that workers suspect management of hypocrisy and insincerity.

6. As mentioned earlier, participation programs are often coupled with the elimination of work rules and a large reduction in the number of job classifications. While these work rules may limit management flexibility to increase productivity, they also limit management's ability to move employees arbitrarily away from desirable jobs, and so forth. Participation will be resisted unless it is coupled with other ways of protecting employees from arbitrary management authority.

7. Both the flexibility given to management and the new ideas generated through participation can lead to employees' skills becoming obsolete. To the extent that status and pay are based on skills, participation can threaten senior employees.

8. Employees often concern that participation will lead to job loss. This is not an unreasonable concern, since management's main purpose in introducing participation is often to increase efficiency and cut labor costs.

9. Finally, as discussed below, if participation does increase in productivity, employees will feel quite resentful unless they share the benefits.

Possible solutions. The solutions to these problems are easy to suggest, but often difficult to implement.

1. Individual employees can be given the choice of working on either redesigned or traditional jobs (and in a few companies the two forms of work exist side by side). In fact, various representative committees and consultative systems permit self-selection; the minority who take part includes those who are most anxious to participate and who probably have the most to offer.

2. The simplest way to ensure that employees perceive participation as meaningful is to make sure that the participation is meaningful in practice. Participation should involve issues of employee concern. Training should be provided so that employees can make meaningful suggestions; members of Japanese quality circles, for example, often receive training in statistical quality control techniques (Cole, 1989). Further, jobs should be designed to increase the range of matters over which employees can exercise discretion.

3. Employee need to be trained to run meetings, to solve problems, and to increase their technical skills. Participation also relies on training to socialize workers and promote identification with the company.

4. As we discuss below employees are likely to engage in participation only if participation is associated with increased job security and their participative efforts are financially rewarded.

Supervisory support

Participation is resisted and sometimes sabotaged by middle- and lower-level managers and especially by supervisors (Klein, 1984; Bradley and Hill, 1983; Kochan, Katz, and Mower, 1984; Walton, 1980). For employees, one of the main advantages of participation is the greater freedom to make decisions on their own, rather than having bosses hovering over them. This same freedom may be threatening to supervisors and managers. Among the problems are the following:

1. Participation threatens supervisors' authority and status. Employees are encouraged to make decisions on their own. Discussions in QCs may reveal managers' mistakes. Autonomous work teams are encouraged to contact staff people and suppliers directly, thus by-passing line supervisors.

2. Supervisors' very jobs may be threatened. In some cases job redesign may lead to one or more levels of management being eliminated, as occurred at Ford's Sharonville plant (Kusnet, 1989).

3. First-line supervisors feel discriminated against. They are forced into a system that typically they had no part designing. As in IndCo, they are forced to share their own power, but don't see their bosses sharing theirs. In some cases, they see guaranteed job security for employees, but none for themselves.

4. American management has always stressed the division between managers who know and plan, and employees who execute. As justification of this division, there has been an ideology that stresses employees' incompetence to participate in decision-making. Many first-line supervisors are firmly convinced that quality circles have nothing to teach them (Bradley and Hill, 1987, p. 75). If managers are forced to listen to their subordinates, they are often uncertain as to what they are supposed to do, and this is very threatening. Yet, participation is unlikely to take root if it is confined to an occasional committee

meeting, while day-to-day work-place relations between employees and their supervisors remain autocratic.

Managerial attitudes such as these may threaten participation's success. Research suggests, for example, that the success of the Scanlon Plan in various plants is directly related to the degree to which managers' believe that their subordinates are in fact capable of making worthwhile suggestions (Ruh, Wallace, and Frost, 1973). Where such trust is lacking (for example, where the supervisor views participation merely as a morale builder), the parties may go through the motions of "counterfeit participation" (Heller, 1971), but the desired payoff in terms of productivity and satisfaction may not be obtained.

Possible solutions. A variety of approaches can reduce management opposition. First, it is important to note that power is not "zero sum" (Likert, 1961): increases in employee discretion need not come at the expense of lower management. Where the parties are at loggerheads, neither side has much power. Effective participation, on the other hand, can increase everybody's power.

Managers are more likely to feel comfortable in the new system if they have had a voice in its design. Retraining managers in the leadership, coordination, and planning skills upon which participation relies is almost essential. Managers will also be more likely to support participation if they share in the organization's profits and if part of their performance rating is based on their QC's success.

Successful implementation of participation requires that top management give the program continuing support. Top management must reward middle- and lower-level managers for successful participation among their subordinates. This may require wholesale modifications in the overall organizational culture. As Howard Love, President of National Steel, put it: introducing shop-floor participation in his company involved changing "an old-line hierarchical organization into a more participative company from the executive suite to the shop floor." (Hoerr, 1988, p. 465).

Changing long-established organizational culture may be quite difficult, though the success of Toyota at NUMMI suggests it is possible. In any case, participation may be easier to introduce in completely new organizations not encumbered by the heritage of past practices.

Finally, if job redesign leads to a reduction in the number of supervisors, those who become redundant should be transferred within the organization. Later we discuss how ordinary employees need job security if participation is to work. The same holds true with regards to management.

Union support

Though unions overall have become somewhat more favorable toward participation over the last ten years, the transition has been painful. Today union attitudes are spread along a continuum between "militant" and "cooperativist" extremes, with many leaders uncertain where they stand (Katz, 1986; Gershenfeld, 1987). Noting that participative programs have been introduced by some militantly anti-union companies, many unionists still view these as chiefly union-busting techniques (Parker, 1985). They see them as forms of manipulation and "speedups in disguise," and as attempts to deflect employees' attention from their economic problems. And some participative schemes, in fact, were agreed to by management with the ultimate objective of persuading workers to negotiate away their jobs (Hoerr, 1988, p. 444).

Unionists are particularly leery of participation programs that management introduces unilaterally, without consulting them. But regardless of how such programs are introduced, they are likely to affect pay, promotional ladders, and job descriptions. One study found that three-quarters of the quality-of-worklife programs in unionized plants dealt with topics subject to the grievance procedure (Cohen-Rosenthal, 1980). The thrust of collective bargaining in the U.S. has been to rigidify and codify personnel practices. In the typical unionized plant, decisions as to the allocation of work among employees are made on the basis of collectively bargained seniority and job classification rules. Many employees believe strongly that these rules give them quasi-property rights in their jobs, rights which they are willing to fight hard to preserve.

Thus participation schemes are often resisted because they threaten these long-enjoyed rights. Job enrichment blurs the boundaries between jobs and disturbs established promotional ladders. In the plants with the most advanced forms of participation, decisions as to the allocation of work are made by work teams on a flexible ad hoc basis. Autonomous work teams may even determine pay and discipline -- blurring the sharp lines between managers and workers that American unions have sought to maintain.

In short, the participation movement involves a tradeoff of predetermined rules for promises of greater participation in the management of work on a day-by-day basis. Traditional negotiations involve higher-level officers; by contrast participative decision-making occurs at the workplace level, thus by-passing these officers. Transition from one system to another is difficult.

Transition is particularly likely to be difficult if changes in work rules have been introduced only after determined worker resistance. Not infrequently, management has set unions in two plants competing against each other, offering to make investments in the plant agreeing to the greatest change in work rules and threatening to close the other.

Job redesign and participation can potentially increase flexibility by trading off job rule protections for flexible work assignments, coupled with worker input into job design and day-to-day performance. In actuality, the managers of many firms embrace the flexibility of weakened work rules and increased ability to reassign workers, but do not deliver substantive worker participation as a quid pro quo. The result is often unhappy workers with fewer job rights and distaste for "participation."

Complicating matters further, many participative programs in unionized plants have been introduced in the context of concession bargaining. Thus, member attitudes toward participation have been heavily colored by their attitudes toward concessions (Katz, 1986). Concession bargaining has become an issue in many union elections, with some officers being defeated because they have been viewed as coopted by management.

Still another problem: In large companies participation may generate a "parallel organization" (Goldstein, 1985) in the union, a hierarchy of union-selected but company-paid participation "facilitators" who may rival the traditional adversarially oriented union hierarchy (Parker, 1985; Kochan, Katz, and Mower, 1984). Jealousy may occur between the two branches, especially if the traditional union leadership views the participators as "selling the union out." (There are similar tensions on the company side between (1) line managers and industrial engineers and (2) the Human Resources or Organizational Development specialists who are responsible for participation's implementation.)

Possible solutions. Understandably the union is less likely to resist if it is an equal partner in designing the participative program, as is occurring increasingly. Indeed there is some evidence that QCs introduced in unionized settings are more likely to last than those introduced in non-union plants (Drago, 1988). There are at least two reasons why this may be the case: (1) unions may screen out badly designed plans; (2) unionized employees may be less afraid to express their opinions, even if they are critical of management.

Below we stress the significance of guarantees of job security and gain-sharing as means of reducing employee resistance. These promises become more credible if the union is in a position to guarantee them.

Given the tension between collective bargaining and cooperative efforts, unions have sought to negotiate guarantees which provide that the collective bargaining agreement is not to be superceded except by specific joint consent. At Xerox, for example, the parties distinguished between "on line" topics, which can be discussed by QWL teams, and "off line" subjects which are covered by collective bargaining (Kochan, Katz, and Mower, 1984). In practice, however, the rigid separation between participation and collective bargaining was difficult to maintain at Xerox (and elsewhere). All was simple as long as the participative team confines itself to purely housekeeping issues. But, once the group began exploring possible means of cutting costs or making changes in job assignments and pay, it inevitably impinged on matters which relate directly to the heart of collective bargaining. In companies which have moved into more advanced forms of participation, such matters are typically referred to the kinds of plant- or company-level representative union-management committees which we have previously described.

> Example: The recent contract between the San Diego Teachers Association and the San Diego School District provides for a framework of joint committees to develop proposals for "educational reforms," such as new class schedules, with a top level joint committee being authorized "to waive contract provisions which interfere with their implementation." (CPER Extra Edition, 1989, p. 1).

Thus, there are strong pressures to extend the scope of participation beyond the strictly shop floor level, if for no other reason than this permits union officials to become involved in the participative process. Union support may well be lost if participation is confined to the workplace.

As with management support, participation is more likely to enjoy union support at low levels if it is also supported by higher-level union officials. Firms that implement participation at one plant while fighting unionization at another plant will often run into difficulties with higher levels of the union hierarchy.

Gain sharing and equitable pay

Pay is a problem for most participative schemes. In the short run, participation may be its own reward: employees often appreciate the opportunity to make suggestions and appreciate any safety and quality of work life improvements that are implemented. In the long run, however, psychic benefits are not enough. Workers see themselves doing supervisors' work without supervisors' pay. Further, if participation contributes to increased profits, employees want to share the benefits.

When participation is part of a concession bargaining package in which employees are forced to accept pay cuts, inequities can also arise. An implicit understanding in most concession bargaining was that there would be "equality of sacrifice." In numerous cases, however, management violated this expectation by such acts as raising managerial salaries shortly after workers accepted substantial pay cuts or by breaking implicit understandings not to shut down plants. Too often management insensitivity to workers' feelings (and good public relations) did much to dissipate early good will.

Finally, traditional pay schemes tie wages to the job being performed and assume that each employee performs a clearly distinguishable job. Such schemes makes employees unwilling to leave jobs which pay well, and make employees leery of new technology that threatens current skills. Understandably senior workers are likely to resist change which might reduce their relative pay advantages. Thus, when participation programs blur job boundaries (as many do) traditional pay schemes become outmoded.

Possible solutions. Some sort of profit or gain (and loss) sharing is a key element in any but the most superficial participation programs.

Gainsharing helps motivate employees to work more cooperatively and efficiently; it makes them more amenable to changes that increase productivity; it provides feedback which informs them as to the success of their efforts; and perhaps most importantly, it satisfies their needs for equitable treatment. Group efforts, particularly group effort toward maintaining norms of high productivity, can only be rewarded by group-based compensation.

There is increasing evidence that gainsharing and participation are mutually reinforcing; each is more effective if offered in conjunction with the other. Indeed the evidence suggests that ESOPs and profit-sharing plans are likely to have an only limited impact on performance unless they are combined with participation (U.S. GAO 1987; Quarrey and Rosen, 1986; Kruse 1988).

As discussed in another paper in this series, there are numerous forms of gain sharing programs. These range along a continuum from individual and group incentives through cost-saving-sharing plans (such as the Scanlon and Rucker Plans) to profit-sharing and Employee Stock Ownership Plans. Individual incentives can be very effective in the short run, and for encouraging specific behaviors. Over the long run, however, individual piece rates and related schemes discourage cooperation and the growth of cooperative work groups, and are harder to develop equitably.

The classic problem with group incentive plans is the "free rider" who shares the group's gain without doing his or her share of the work. This problem can be reduced if work-group members police each other. Peer pressure, in turn, is more effective when there are long-term employment relations, as we discuss later on.

ESOP and profit-sharing plans, which reward organization-wide performance, are likely to develop feelings of organizational commitment and fair treatment rather than specific motivation for harder work.

In addition to sharing gains, many participatory firms are moving toward pay-for-knowledge programs. Here employees are paid based on the number of jobs they have learned to perform. Pay-for-knowledge programs give employees an incentive to learn new jobs: human capital is increased. Greater knowledge also broadens the range of issues about which employees are capable of participating. Beyond this, if workers are paid for what they know rather than what they are doing at the moment, they may be less likely to resist being moved from one task to another. Thus pay-for-knowledge may promote flexibility in work assignments (U.S. BLMR, 1986).

Status equalization

Regardless of the level at which it occurs, participation tends to equalize job responsibilities and to decentralize decision-making. Further, a considerable range of research (Deutsch, 1985; Cook and Hegvedt, 1983; Lazear, 1987; and Levine; 1989) suggests that successful participation is accompanied by a reduction in status differentials. If management insists on preserving all of its traditional privileges and advantages, little real participation will occur.

Many of the best-publicized participation experiments have been accompanied by important changes in status symbols. These have begun to reduce what a prominent union leader called:

> "the double standard that exists between workers and management... Workers challenge the symbols of elitism typically

> taken for granted, such as salary payments versus hourly payment; time-clocks for blue-collar workers; well-decorated dining rooms for white collar workers vs. plain, Spartan-like cafeterias for blue-collar workers; privileged parking for the elite but catch as you can for workers." (Bluestone, 1974, p. 47).

At the Gaines dog-food plant, for instance, there were no reserved parking lots, no time clocks, and no differentiation between management offices and worker lounges. Workers were free to make phone calls on company time (just like management). Many Japanese-owned plants in the U.S. require all employees, management and workers, to wear similar uniforms. Often employees are called "associates" or "team members" rather than workers. Such reductions in status differentials not only tend to reduce dissatisfaction, they also help develop an atmosphere of trust and confidence between workers and management and so reinforce the atmosphere of participation.

Participation may also blur the traditional sharp distinction between union members and management. Aside from union members performing many typical management functions, at NUMMI (and under recent steel industry contracts) a new position of "team leader" has been established -- a union member with many managerial responsibilities.

Participation is often accompanied by reductions in wage differentials. For example, a strong case can be made for equal pay for all members of autonomous work teams where members constantly rotate duties (Goodman, 1979). Many gain-sharing and profit-sharing programs are related to group performance; most group incentives reduce within-group pay differentials and thus reinforce the feeling that everyone is in the same boat.

Job security

Employees are unlikely to cooperate in increasing efficiency, if they fear that by so doing they jeopardize their own job security. Guarantees of job security reduces employees' fears that high productivity will lead to layoffs.

Job security serves numerous other purposes: it makes employees more receptive to new ideas and more comfortable presenting their own new ideas. It helps persuade employees to forgo short-term gains in order to build a more effective organization. It gives employees a chance to feel that their efforts on behalf of their work group will pay off. Indeed successful participatory systems depend in part on employees monitoring one another in order to maintain group norms of high effort; if an employee expects to be in a work group for a longer period of time, the sanctions of the group will be a more important motivator. Further, from a firm's point of view, time is needed to socialize employees, and to recover the higher investment in human resources that accompanies participation.

Possible solutions. Substantial job security and long-term employment relations (if not life-time employment) are important elements in the human resources policies of such "high-commitment firms" as Hewlett-Packard and IBM. Important steps toward providing life-time employment have also been taken in recent union-management contracts, especially in the auto and steel industries. Two types of policies help provide job security.

1. Internal justice systems (whether union grievance procedures or the equivalent) that provide due process protections, appeals procedures, and guarantees that discipline will be for "just cause" only (rather than "at will"). These policies reassure workers that they can participate without fear of punishment, and lower turnover by giving dissatisfied workers alternatives to quitting.

2. Employment policies designed to avoid layoffs. High commitment companies reduce layoffs by a variety of means: through transferring workers to other divisions or locations, where feasible; through financing truly voluntary early retirement programs; through reductions in hours and in contracting out; and through assigning temporary surplus employees to maintenance work or training programs (economists call this "labor hoarding").

> Example: In contrast to standard automobile industry practice, NUMMI went through a considerable period of slow orders without layoffs. Instead, training programs were greatly intensified. In return, NUMMI workers have demonstrated their willingness to work a pace at least slightly higher than the industry standard.

Job Security policies can promise not make layoffs when job requirements have been reduced due to new technology or to ideas which are generated by employees. Stronger versions may even promise never to have layoffs.

To make such policies feasible, during periods of peak demand high commitment firms often contract work out and make use of "contingent" part-time or temporary employees. Thus firms are able to protect their permanent "core" of employees, the ones who are expected to do the participating.

Avoiding Plateauing

As illustrated in our IndCo case, many shop floor participation programs plateau and decline. After initial successes, interest begins to wane, the agenda of easily solvable problems grow smaller, and meetings become less frequent.(Walton, 1980; Griffin, 1988; Accordino, in press). Particularly in assembly lines or other settings where workers discretion has been minimized, a QC can quickly run out of problems for which employees are qualified to participate -- at least without running into management resistance. In short, keeping participation programs going may be more difficult than getting them started. Without continuous effort, they may simply atrophy. The difficult trick is to institutionalize participation so that all parties feel rewarded by the process and make it a habit.

Possible solutions. The chances of plateauing may be reduced with the twin strategies of pushing authority downward, and extending participation upward.

Pushing authority downward implies expanding the scope of participation. Quality circles can be transformed into autonomous work teams and given the authority to implement (not just suggest) solutions to certain problems. Providing a QC a budget, increasing the training of its members, and permitting the workers to interact directly with engineering, marketing, and other staff departments can increase workers' abilities to participate.

Successful participation in the long run can involve letting work groups have discretion over maintenance, quality control, work organization, and so forth. At some firms, influence has moved upwards to include hiring, compensation practices, choice of technology, and investment.

Pushing participation upward involves participation at the plant or organization-wide levels. When one shopfloor group starts changing technology, what it does may affect other work groups. Representative committees (such as the Screening Committees in Scanlon Plan Companies or the Labor Team in the New York City Sanitation Department) can coordinate decisions across groups.

Ultimately participation may include employee representation on top management councils or even on the Board of Directors. This last step may take a long time to achieve, but it should not be rejected out of hand. The important thing is that workers have a say as well as a stake in how the organization is run and where it is going.

Policy

Normally, economists are wary of interfering with the operations of the free market. There are, however, three market imperfections concerning participation which warrant public policy intervention: (1) there are externalities from work organization (i.e., one company's choice of work organization affects the environment of other firms); (2) information about workplace innovations is a public good; and (3) the government itself is a major employer. These three market imperfections suggest a role for government to (1) provide a supportive environment for participation; (2) disseminate information; and (3) act as a model employer.

Provide a supportive environment

Our analysis, so far, has focussed on conditions within the firm. The firm's environment affects the success of participation; in turn, the organization of work at a single firm affects the environment of other firms. Below, we describe how the nature of a firm's product, labor, and capital markets and the legal environment can create problems for participation. As is usual in the presence of externalities, government intervention may be able to increase efficiency.

Product Market. As we have argued above, the chances of participation being successful are increased if workers are guaranteed considerable job security. However, firms with policies of avoiding layoffs are particularly badly hit when demand for their output declines -- other companies can reduce costs through layoffs. Consequently public policies which encourage economic stability also lower the costs of job security, and are likely to encourage the growth of participation. (There is evidence that economic crises can prod management, workers, and unions to initiate participatory experiments; nevertheless, stability of demand reduces the costs of maintaining participation.)

At the same time, when participative firms hoard employees, they help to moderate downturns: unemployment rises less and aggregate demand is stabilized. The more firms that avoid layoffs, the more stable our economy becomes. Thus, participation fosters stability, and stability fosters participation.

Changes in the unemployment insurance (UI) system can reduce the cost of providing job security. Granting partial UI for partial layoffs (i.e., job sharing), increasing the experience rating of UI, and releasing Jobs Training Partnership Act funds for workers who have not yet been laid off will eliminate the current subsidy that labor-hoarding firms pay to those companies that lay off workers.

Labor Market. If the new Administration is to meet the high job-creation goals announced during the recent Presidential campaign, extremely low levels of unemployment will be needed. High unemployment works to the relative advantage of firms that rely upon the threat of unemployment to motivate workers. When unemployment is low, participatory firms gain in relative productivity. As noted above, in Sweden the initial impetus for job redesign came from the fact that workers refused to work at boring jobs when there was low unemployment (Cole, 1989). As long as firms draw benefits from unemployment to discipline workers, high employment may not be sustainable. Therefore, encouraging participation may be a requirement of a rapid increase in employment. Conversely, high employment rates will make participation more feasible (Stern, 1982).

Capital Market. Participative policies are more likely to pay off in the long run than in the short run. They require considerable investment in human resources, especially training. They also require employers to avoid laying off employees during recessions and perhaps to pay above-average wages, since any equalization of wages is likely to be upwards. If proponents of participation are correct, all these investments will eventually pay off. For accounting purposes, however, these costs are "expenses," not tangible "investments." Thus, in the short-run they reduce profits and cash flow.

The recent wave of takeovers, levered buyouts, mergers, and restructuring often lead to firms having high debt loads and desperate needs for cash flow. Although not all takeovers are undesirable, many liquidate their human assets at a fast rate. Takeovers whose profits come from reneging on promises to workers should be discouraged -- each such reneging makes it harder for remaining high-commitment strategies to work.

Capital market imperfections can be addressed by any means that lengthen managers' and investors' horizons. Proposals others have made include: a small transactions tax on stock sales, to reduce speculation; stock voting rights that increase with length of ownership; removing the tax subsidy for financing with junk bonds; changing the tax laws to encourage long-run remuneration of executives; and treating training costs as investments on corporate balance sheets (at least as footnotes), in order to make human resource investments more visible (Flamholtz, 1985).

Legal environment. There are serious legal questions as to the extent employers may discuss "conditions of employment" with company-sponsored committees of employees. If the company is non-union, such a committee might be held to be a "company union." If a union is certified, dealing with such a committee without the union's consent might violate the union's exclusive bargaining rights (Sockell, 1984). There are still further questions as to whether union representatives may serve on company boards of directors, since they are then acting as management. Furthermore, if representatives from the same union sit on several boards, there may be anti-trust problems.

The solution here is obvious. The National Labor Relations Act should be revised to make it clear that participation programs are legal in both union and non-union settings, as long as their purpose is neither to bypass nor to avoid unions.

The legal environment also has indirect affects on participation. As noted above, guaranteed individual rights facilitate participation. These rights, such as just-cause employment protection, can lead to adverse selection -- that is, low quality workers will try to obtain jobs at firms with better employee rights. If the government mandates such rights universally, the costs of adopting participatory schemes will be lowered (Levine, 1987).

Disseminate Information

If knowledge about the characteristics of successful participation plans were widespread, the organizations that introduced participation would make fewer mistakes. Just as the federal government has a role subsidizing and disseminating scientific research, it has a role subsidizing basic workplace research, and disseminating the results through publications and conferences. In Japan, for example, there is an average of two conferences on QC's every day (Cole, 1989).

The Bureau of Labor Management Relations and Cooperative Programs has performed a very useful function in publicizing workplace innovations. So has the Federal Mediation and Conciliation Service. Area Labor-Management Committees, university research centers, and private agencies (e.g., Work in America, and the National Center for Employee Ownership) have also proven to be effective disseminators of research.

While there is no question that the government must do more to disseminate information, it also can do more to produce knowledge. If any fraction of the ambitious research program described below is to be carried out, federal financial assistance will be needed.

Government as employer

The combined federal, state, and local governments of the U.S. employ 16 percent of the work force. The government attempts to approximate private sector "best practices" in setting wages, hiring standards, and so forth. Similarly, it makes sense for the federal government as employer to learn from the successful participation experiences of both the private and public sectors.

There have been numerous successful public-sector participation plans. Some examples are engineers at the TVA, and the sanitation workers in New York. The federal government should encourage departments and agencies to introduce participation. While participation should not be mandated from above, high-level leadership can contribute to workplace changes.

Small seed grants have been shown to be effective at spurring innovation at the local level (Accordino, in press).

Further Research

The effects of participation at work has been a major research question in the social sciences for generations. Nevertheless, several basic questions remain.

Much past research has examined whether an undifferentiated concept called "participation" works. At this point the answer is clear: "Sometimes." The next step is to determine the circumstances which are favorable for the success of each major form of participation. To carry out research on what makes participation successful, we need to look at both successes and failures. With some notable exceptions (e.g., Cammann, et al., 1984; Goodman, 1979) there is a natural tendency to focus on successful participation plans.

Research in this area will face numerous difficulties. Participation programs are introduced in a variety of situations. What succeeds with skilled craft workers in a small company may fail with unskilled workers on an assembly line. At the same time, different plans are adopted for different purposes and have a variety of payoffs.

Ideally, performance measures such as productivity, quality, and satisfaction should be used to measure the success of participation plans. A broad-based survey could use financial data to calculate total factor productivity, and correlate performance with various measures of participation. The participation measures should include measures of the level, form, scope, and power of any participatory institutions. Because participation plans can continue to "survive" after they have lost effectiveness, it is useful to measure such dimensions as the number of workers involved, number of meetings per month, number of suggestions implemented, the topics covered, and so forth. Such a project might be carried out by supplementing the Longitudinal Establishment Data with survey measures.

The literature we surveyed above suggests a large number of determinants of success. We can try to relate the success of plans to the presence of employment security, the form of gain sharing, the skill level of employees, the attitudes of upper and lower management, the immediate impetus for introducing participation, the amount and form of training, the extent and nature of assistance provided by staff department and outside consultants, and so forth.

While much needs to be done to measure the outcomes of various sorts of participation in various situations, perhaps even more effort has to be devoted to studying the dynamics of the participative process. Research is required on the problems faced at each stage of the participation process; how these are problems solved; and how long-lived plans avoid plateauing. Such research requires individual case study research and participant observation.

The output of this research program would be a better understanding of how the firm's environment and the characteristics of the participation plan lead to differences in success.

Conclusion

Programs under which employees participate in workplace decisions have received much attention in recent years, in part because of the apparent success of participation in Japanese firms. A large number of U.S. companies have also experimented with worker participation programs, especially quality circles and autonomous work teams.

Employee participation programs operate by tapping workers' knowledge; by satisfying employee needs for involvement; by reducing supervision; by building worker commitment and trust; and by improving union-management relations.

In a majority of empirical studies, direct participation is associated with at least a short-run improvement in one or more of the following variables: satisfaction, commitment, quality, productivity, turnover, and absenteeism. In almost no cases does participation make things worse. Nevertheless, only a small proportion of participation plans can be classified as long-term successes. After a brief honeymoon, most plans peak and peter out.

Sustained long-run improvements in performance occur when participative groups are given the information and authority to make substantial changes in the workplace. Day-to-day supervisory behavior must be altered so that formal participation plans are consistent with the way things are normally done.

The pay plan must reward workers for increased responsibility and productivity. Furthermore, job security and guarantees of individual rights are prerequisites for workers to feel free to participate. Managers, like workers, must be rewarded for successful participation.

Successful participation requires the development of trust. Employees need to believe that participation is not merely a means of speedup or a threat to their jobs. In a unionized context they must be persuaded that it is not a pretext for cutting back work-rule protection or for breaking the union.

Given these requirements, the fact that most quality circle and related participatory plans have few long-run effects is, therefore, not surprising. Too many plans are merely pasted onto organizations that remain fundamentally unchanged.

Policy Recommendations:

» The government should subsidize research, demonstration projects, and the dissemination of research concerning participation. This effort will lower the costs of introducing participation, and help the parties avoid the mistakes others have made.

» The administration should encourage the introduction of participation within federal agencies. Participation's potential advantages of committed workers, flexibility, higher quality, and so forth are valuable in the public sector as well as the private.

- The National Labor Relations Act should be revised to make it clear that participation programs are legal in both union and non-union settings, as long as their purpose is neither to bypass nor to avoid unions.
- Continuity of employment is an important condition for participation plans. Encouragement of participative plans is therefore one of the many benefits associated with full employment. Granting partial unemployment insurance for partial layoffs (i.e., job sharing), increasing the experience rating of unemployment insurance, and releasing Jobs Training Partnership Act funds for workers who have not yet been laid off, will reduce the indirect subsidy that firms that lay off workers receive from firms that strive to maintain full employment.
- Participation plans often take some initial investment in time and effort before improvements are seen. Any actions that the government could take to lengthen the time horizons of managers and investors would make it easier for firms to invest in participation.
- More research is needed, especially to understand how to avoid those pitfalls which make so many programs fail.

REFERENCES

Accordino, John, "Quality of Working Life Systems in Large Cities: an Assessment," Public Productivity Review, in press.

Bluestone, Irving, "Comments on Job Enrichment," Organizational Dynamics. **2**, Winter 1974: 46-47.

Bradley, Keith and Stephen Hill, "'After Japan': The Quality Circle Transplant and Productive Efficiency," British Journal of Industrial Relations, **21**, 3, 1983.

Bradley, Keith and Stephen Hill, "Quality Circles and Managerial Interest," Industrial Relations, **26**, 1, Winter 1987: 68-82.

Cammann, Cortlandt, Edward E. Lawler III, Gerald E. Ledford, and Stanley E. Seashore, Management-Labor Cooperation in Quality of Worklife Experiments: Comparative Analysis of Eight Cases, Institute for Social Research, University of Michigan, Ann Arbor, Michigan, 1984.

Coch, Lester and John R. P. French. "Overcoming Resistance to Change," Human Relations, **1**, 4, 1948: 512-532.

Cohen-Rosenthal, Edward, "Should Unions Participate in Quality of Worklife Activities?" Quality of Worklife: The Canadian Scene, **3**, 4, 1980.

Cole, Robert. The Macropolitics of Small Group Activities: America, Japan, and Sweden. Berkeley: University of California Press, 1989, in press.

Cook, Karen, and Karen Hegtvedt, "Distributive Justice, Equity, and Equality," Annual Review of Sociology **9**, 1983: 217-241.

Cooke, William. Joint Labor-Management Relations and Company Performance: New Paths or Going in Circles. Kalamazoo: Upjohn, 1987.

Cotton, J. L., D. A. Vollrath, K. L. Froggatt, M. L. Lengnick-Hall, and K. R. Jennings, "Employee Participation: Diverse Forms and Different Outcomes," Academy of Management Review, 1988, **13**, 1: 8-22.

CPER Extra Edition, California Public Employee Relations, Institute of Industrial Relations, University of California, No. 79X, January 1989.

Deutsch, Morton, Distributive Justice: A Social Psychological Perspective, New Haven, CT, Yale University Press, 1985.

Drago, Robert. "Quality Circle Survival: an Exploratory Analysis," Industrial Relations, **27**, 3, Fall 1988: 336-351.

Emery, Fred and Einar Thorsrud, *New Designs for Work Organizations*. Oslo, Sweden, Tannum Press, 1969.

Fenwick, Rudy and Jon Olson, "Support for Worker Participation: Attitudes Among Union and Non-union Workers," *American Sociological Review,* **51**, 4, August 1986: 505-522.

Flamholtz, Eric G., *Human Resource Accounting*, Jossey-Bass, San Francisco, 1985.

Ford, R. N., *Motivation Through Work Itself*, New York, American Management Association, 1969.

Ford, Robert, "Job Enrichment Lesson From AT&T," *Harvard Business Review*, January 1973: 96-106.

Freund, William C. and Eugene Epstein, *People and Productivity*, Homewood, IL, Irwin, 1984.

Gershenfeld, Walter, "Employee Participation in Firm Decisions," in Morris Kleiner, Richard Block, Myron Roomkin, and Sydney Salsburg, eds., *Human Resources and Performance of the Firm*, Madison, IRRA, 1987.

Goldstein, S. G. "Organizational Dualism and Quality Circles," *Academy of Management Review* **10**, 1985: 504-17.

Goodman, Paul, *Assessing Organizational Change: The Rushton Quality of Worklife Experiment*, New York, Wiley, 1979.

Griffin, Ricky. "Consequences of Quality Circles in an Industrial Setting: a Longitudinal Assessment," *American Management Journal*, **31**, 2 1988: 338-358.

Hackman, J. Richard and Edward Lawler. "Employee Reactions to Job Characteristics", *Journal of Applied Psychology Monograph* **55**, 1971, 259-286.

Heller, Frank, *Managerial Decision Making*, London, Tavistock, 1971.

Hoerr, Joseph, *And the Wolf Finally Came: The Decline of the American Steel Industry*, Pittsburgh, University of Pittsburgh Press, 1988.

Katz, Harry, "The Debate over the Reorganization of Work and Industrial Relations within the North American Labor Movement," paper presented at the Conference on Trade Unions, New Technology, and Industrial Democracy. University of Warwick, June 6-8, 1986.

Klein, Janice, "Why Supervisors Resist Employee Involvement," *Harvard Business Review*, **62**, 5, September 1984: 87-95.

Klinger, Sally, and Ann Martin, *A Fighting Chance: New Strategies to Save Jobs*, Ithaca, ILR Press, 1988.

Kochan, Thomas, Harry Katz, and Nancy R. Mower, Worker Participation and American Unions: Threat or Opportunity? Kalamazoo, MI, Upjohn, 1984.

Kochan, Thomas, Robert McKersie, and Harry Katz, "U.S. Industrial Relations in Transition: A Summary Report," Proceedings, IRRA, 1985: 261-76.

Kruse, Douglas. Essays on Profit-Sharing and Unemployment, Unpublished Ph.D. dissertation, Harvard University, 1988.

Kusnet, David. "Worker Ideas Shape a Better Workplace," AFL-CIO News. 34, 2, January 21, 1989: 6.

Latham, Gary P. and Gary A. Yukl, "A Review of Research on the Application of Goal Setting in Organizations," Academy of Management Journal, 18, 4, December 1975: 824-45.

Lazear, Edward, "Pay Equity and Industrial Politics," Working paper, Hoover Institution, Stanford University, 1987.

Leitko, T. A., A. L. Greil, and S. A. Peterson, "Lessons at the Bottom: Worker Nonparticipation in Labor Management Committees as Situational Adjustments," Work and Occupations, 12, 1985: 285-306.

Levine, David I., "Cohesiveness, Productivity, and Wage Dispersion," Working paper 14, Institute of Industrial Relations, University of California, Berkeley, 1989.

Levine, David I., "Just Cause Employment Policies in the Presence of Worker Adverse Selection," mimeo, University of California, Berkeley, 1987.

Levine, David I., and Laura Tyson, "Participation, Productivity, and the Firm's Environment," paper presented at the Conference on Compensation Policies and Productivity, Brookings Institution, 1989.

Lewin, Kurt, "Studies in Group Decision," in Dorwin Cartwright and Alvin Zander, eds. Group Dynamics. Evantson, IL, Harper, 1953.

Likert, Rensis. New Patterns of Management. N.Y., McGraw-Hill, 1961.

Locke, Edwin and David M. Schweiger. "Participation in Decision-making: One More Look," in Barry Staw and L. L. Cummings, eds., Research in Organizational Behavior, Vol 1, 1978.

Lowin, Aaron., "Participative Decision-making: A Model, Literature Critique, and Prescriptions for Research," Organizational Behavior and Human Performance, 3, 1968: 68-106.

Marks, M.L., Mirvis, P.H., Hacket, E.J., and Grady, J.F., "Employee Participation in a Quality Circle Program: Impact on Quality of Worklife, Productivity, and Absenteeism," Journal of Applied Psychology, 71, 1986: 61-69.

Marrow, Alfred, David Barrows, and Stanley Seashore, Management by Participation, New York, Harpers, 1967.

Miller, Katherine and Peter Monge. "Participation, Satisfaction, and Productivity: A Meta-analysis," Academy of Management Journal 29, 4, 1986: 727-753.

Morishima, Motohira, "Information Sharing and Firm Performance in Japan," unpublished paper, 1989.

Morse, Nancy and Everett Reimer, "The Experimental Change of a Major Organizational Variable," Journal of Abnormal and Social Psychology, 52, January 1956: 120-129.

Myers, Scott, Every Employee a Manager: More Meaningful Work Through Job Enrichment, New York, McGraw-Hill, 1970.

Parker, Mike, Inside the Circle: a Union Guide to Worker Participation in Mangement, Boston, South End Press, 1985.

Peters, Thomas and Robert Waterman, In Search of Excellence, New York, Harper, 1982.

Porter, L.W., Edward E. Lawler, and J. Richard Hackman, Behavior in Organizations, NY, McGraw-Hill, 1975.

Quarrey, Michael, and Corey Rosen, Employee Ownership and Corporate Performance, Oakland, CA, National Center for Employee Ownership, 1986.

Ruh, Robert, Roger Wallace, and Carl Frost, "Management Attitudes and the Scanlon Plan," Industrial Relations, 12, 1973: 282-288.

Schuster, Michael "The Impact of Union-Management Cooperation on Productivity and Employment," Industrial and Labor Relations Review 36, 3, April 1983: 415-430.

Schuster, Michael, Union-management Cooperation: Structure, Process, Impact, Kalamazoo, MI, Upjohn, 1984.

Sockell, Donna, "The Legality of Employee-participation Programs in Unionized Firms," Industrial and Labor Relations Review, 37, July 1984: 541-556.

Staw, Barry and Jerry Ross, "Commitment to a Policy Decision: a Multi-Theoretical Perspective," Administrative Science Quarterly, 23, 1978: 40-64.

Stern, David, Managing Human Resources: The Art of Full Employment, Auburn House Publishing, Boston, MA, 1982.

Stern, Robert N., "Participation by Representation," Work and Occupations, 15, 4, November 1988: 396-422.

Strauss, George, "Managerial Practices," in J. Richard Hackman and V. Lloyd Suttle, eds., Improving Life in Organizations, Santa Monica, Goodyear Publishing, 1977.

Strauss, George. "Workers Participation in Management: An International Perspective," in Barry Staw and L. L. Cummings, eds., Research in Organizational Behavior, 4, 1982: 173-265.

Trist, Eric, G.W. Higgin, H. Murray and A.B. Pollock, Organizational Choice, London, Tavistock, 1963.

(U.S. BLMR) U.S. Bureau of Labor Management Relations and Cooperative Programs, Exploratory Investigations of Pay-For Knowledge Systems, BLMR 108, 1986.

(U.S. BLMR) U.S. Bureau of Labor Management Relations and Cooperative Programs, The Changing Role of the Union leaders, BLMR 127, 1987.

(U.S. GAO) U.S. General Accounting Office, Employee Stock Ownership Plans: Little Evidence of Effects on Corporate Performance, Washington, GAO, 1987.

Verma, Anil and Robert McKersie, "Employee Involvement: The Implications of Non-Involvement by Unions," Industrial and Labor Relations Review, 40, 3, July 1987: 556-68.

Voos, Paula, "Managerial Perceptions of the Economic Impact of Labor Relations Programs," Industrial and Labor Relations Review, 40, 1987: 195-208.

Wagner, John and Richard Z. Gooding, "Shared Influence and Organizational Behavior: a Meta-analysis of Situational Variables Expected to Moderate Participation-Outcome Variables, Academy of Management Journal, 30, 3, Sept 1987; 525-51.

Walton, Richard, "Establishing and Maintaining High Commitment Work Conditions," in J.R. Kimberly and Robert H. Miles, The Organizational Life Cycle, San Francisco, Jossey-Bass, 1980.

Work in America, Report of Special Task Force to the Secretary of Health, Education, and Welfare. Cambridge, MA, MIT Press, 1973.

Wyatt, S. and J. N. Langdon. Fatigue and Boredom in Repetitive Work, Industrial Health Research Council, Reprint No. 77, London: HMSO, 1933.

36. EFFORTS TO SOLVE QUALITY PROBLEMS

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36. EFFORTS TO SOLVE QUALITY PROBLEMS

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INTRODUCTION

There is a crisis in America that goes to the very heart of our way of life and our quality of life. That crisis deals with the quality of goods and services produced in America. It is reflected in the education our children receive, our health care system, government services, the quality of our jobs, and the stress of our lifestyles. We are being hard pressed by other countries which want a part of the American dream, and which are capturing American markets at home and abroad, along with American jobs. Some of our own industries are moving overseas because they believe cheap labor will provide more economical production and improve their competitive advantage.

Many believe that we are headed for an economic crisis caused by the reduced ability of our manufactured goods to compete with foreign goods. Likewise, there is foreign encroachment into service industries such as finance, temporary help and retail trade. American products are losing customers and this loses jobs for Americans. Worries have centered not only on the lower price of foreign products (which may be primarily due to much lower labor costs, government supports, and low overhead), but also on the superior quality of foreign products. Increased pressures from international competition for sales in the United States, and an inability of American products to compete well in foreign markets has resulted in our balance of trade deficit growing to record levels. While new technology can give us a competitive boost our edge in technology narrows each year. Soon we may not have any edge at all, because of the ease of copying new discoveries. The best way to beat foreign competition is through high quality, innovative products and services at competitive prices.

A NEW APPROACH TO QUALITY

Lately there has been a lot of news about the quality revolution in Japan. In particular, high-quality low-cost electronic and automotive products have flooded the U.S. market. Some believe that Japan is dumping these high quality low priced products below manufacturing cost to create long term markets. Generally, this has not been true. It would not be possible to build the industrial complex that Japan has by losing money on each sale. This illustrates a widespread misperception that high quality necessarily requires spending more money. High-quality is not expensive. Quality management is a very rational, cost effective approach to conducting business that is necessary to become competitive in an increasingly competitive international market place. A popular definition of "Total Quality Management" is: an approach for continuously improving the quality of goods and services delivered through the participation of all levels and functions of the organization (Pfau, 1989). It has been estimated that finding, repairing and/or replacing mistakes and product flaws represents about 25 percent or more of sales (Crosby, 1982; 1983). The Act establishing the Malcolm Baldridge National Quality Award states that poor quality costs companies as much as 20 percent of sales revenues nationally (Congressional Record, 1987). The Defense Department estimated in mid-1983 that defective procurement constituted between 10 to 30 percent of the weapons budget, or as much as $10-30 billion annually (Aviation Week and Space Technology, 1987). Thus, low quality is expensive.

Garvin (1983) conducted a study of production operations of manufacturers of air conditioners in both the United States and Japan. He found that even the poorest Japanese company had a failure rate less than half that of the best U.S. manufacturer. High quality was also related to high productivity as measured by output per person-hour. He concluded that high quality in Japanese companies was due to "sound" management practices, such as working with vendors to improve their performance, educating and training the workforce, setting targets for quality improvement, relying on specific and timely information on defects and field failures, and demonstrating top management interest and commitment. In addition, he emphasized long-term commitment to quality as a success factor in Japanese companies as opposed to quick fix solutions in American companies.

Another fallacy that has hindered the widespread utilization of quality management principles is the perception that quality is achieved by inspecting for defects after the product is completed. Even the best inspection system cannot guarantee that defects will not reach the customer, and such inspection is very expensive. It is a misconception to think that quality is a minor technical issue, mostly concerned with administrating inspection procedures, and consequently can be delegated to a separate corporate department. The foremost principle of modern quality management is to ensure that defects are not made in the first place. This is achieved through carefully designed systems, by constantly seeking to improve existing processes, and by building quality "in" during each step of the production process.

The quality approach has repeatedly proven to be cost effective. At General Dynamics, the first-time yield in a machine shop at a division increased from 66 percent to 83 percent in acceptance rates (Boileau, 1984). At Westinghouse, the yield of fully-conforming printed circuit boards increased from 60 percent to about 90 percent (Ryan, 1983). The quality improvement project implemented at a bank yielded an increase of 17 percent in productivity (Eldridge, 1983). The quality efforts in a Dow plant yielded a 50 percent improvement in attendance, 28 percent reduction in manpower, increase in on-time shipment and improvement in customer relations (Bemowski, 1988). As a result of improvements suggested by an employee group at a Ford plant, the reject rate through the valve-centering machines has been reduced by about 37 percent (Tavernier, 1981).

Modern quality improvement philosophy is based on involvement and participation from top management to the shop floor, customer orientation, comprehensive quality monitoring, supportive management systems, and a continuous improvement philosophy. Delivery of quality is analogous to a chain where the weakest link determines the strength of the whole chain. All processes (links) in the whole company need to be devoted to delivering quality products or services. Even if a minor process has a glitch, the final product or service can be defective; defects are expensive to rework and produce unhappy customers. This philosophy requires cooperation between management and labor.

It is often assumed that quality control or quality improvement is limited to manufacturing. The delays, costs and other problems that result from bad quality in administrative procedures and decisions, for example, burden both private industry and government agencies. Ultimately, quality costs are a burden to the whole U.S. economy. In particular, with respect to export industries, it is important that all processes, administrative and others, be of high quality and low cost. Quality in internal services can affect our exported products. For example, it has been claimed that some American-made automobiles have a $600 "overhead" charge just to cover the cost of employee health care services. Quality management principles apply equally well to services as to manufacturing.

CONCEPTS OF QUALITY

Quality has many characteristics which tend to make it a complex issue even though it seems so simple. Quality is an integrated aspect of all steps in a process that defines the qualitative character of the output of that step; additionally, quality is a personal perceptual label that defines the individual's judgement about a product or step. Thus, quality has a perception aspect and an action aspect. The following is a structure through which "quality" can be defined and examined. Garvin (1984) has proposed five different ways to define the various facets of quality. The first way is the transcendent view which is the psychological concept of "quality" as an individual perception that varies from person to person. Each of us has our own definition of quality and we can subjectively rate products and experiences qualitatively. There are products that we "like" and those that we do not like. The second aspect can be quantitatively defined in terms of specifications or desired attributes of a product. Is it the right color? How many doors does it have? The third is "user" or "customer" based and is market driven. Quality consists of product characteristics that increase consumers' satisfaction and promote greater customer desire to acquire the product. Individual perception is not as important as global group perceptions. The fourth level of definition is primarily concerned with engineering design and manufacturing process considerations. Quality is a process of conformance to requirements and/or specifications. Deviations from these result in reduced quality. Last, there is the value-based level. Quality is reflected in the greatest product performance characteristics for an acceptable or equal price.

Quality is not an entity in itself, it is an attribute of other entities (products, services, processes, people, etc.) as perceived by different players in the market place. Quality professionals and general customers have a variety of views on what makes the quality in products and services (West, 1987). Takeuchi and Quelch (1983) emphasized that quality goes beyond making a good product. It also includes focusing on worker motivation, design, and the production process. Quality is also a matter of watching for key trends in customers values and perceptions. Thus, the management of quality pervades all aspects of management and should be approached from a "total system" perspective. We envision quality at the workplace as having at least three separate, yet interrelated, aspects. These are the quality of the goods and services produced, the quality of the workforce, and the quality of working life. High quality goods and services cannot be produced unless there is a high quality workforce working with a high quality production process; and a high quality workforce can only be maintained when there is a high quality of working life. Each complements the other and each is necessary for the other. Within this framework, the pursuit of quality depends on using each of these aspects to enhance and reinforce the others. The management of quality in this regard is then a matter of philosophy, of commitment, of partnership, and of scientific improvement.

MANAGEMENT OF QUALITY

Quality is a matter of philosophy because it lies in societal values.

Quality needs top management leadership and involvement. Quality improvement is a top management issue. It is a strategic issue for staying in business long-term and is just as important as profits. Quality can only be accomplished by top management leading the charge.

Quality is a matter of commitment: long term commitment, commitment to the customer, commitment to the workforce, and the society.

Quality needs to be planned for and sustained in the long run. It is not a one time decision, it is a continuous process. The customer's needs and expectations about products and services are of ultimate importance for long term survival. Ignoring customers will have long term detrimental effects. Customers are getting more critical towards bad quality, are more informed and are constantly increasing expectations. Only by being able to satisfy and even anticipate these higher expectations will companies be able to prosper in the long-term. The workforce is the most important asset of any company. Long term commitment to the workforce, appropriate training, development, and reward systems are prerequisites to creating a climate that fosters creativity, participation, involvement, satisfaction, and ultimately performance and quality.

Quality is a matter of partnership, between management and the workforce, with suppliers, manufacturers, assemblers, sellers, repairers, service providers, and customers. Team work, participation, and coordination are important management practices that will support a quality philosophy. A change of culture to "us together" and trust, rather than adversarial and confrontational labor-management relationships is of ultimate importance.

Quality is a matter of scientific improvement. There is always a better way of doing things. It is the job of everybody to think about how to do things better. Investigation, creativity, and directed experimentation are the basis for quality improvement. Quality initiatives should be pushed as far upstream in the process as possible. We should constantly seek to remove the causes of bad quality and design good quality into the systems. Improvements are based on careful scientific studies supported by data and information. Observational studies and designed experiments should be conducted using scientific principles of induction and deduction in a continuous, never-ending search for improvements. Statistical and research methods play essential roles in this process. Inspection for quality is replaced by efforts of everyone to remove causes for, and prevent, bad quality.

HISTORICAL AND THEORETICAL BACKGROUND

It was not until the early 1930s that quality control became a discipline in its own right. The American physicist and statistician Dr. Walter A. Shewhart, published the seminal book "Economical Control of the Quality of Manufactured Product" in 1931. Shewhart inspired the British statistician Pearson to start similar quality initiatives in England. Industrial and social changes precipitated the creation and implementation of new management theories concerned with productivity. Taylor's Scientific Management Theory (1911) provided the tools and techniques as well as a management system to design work systems that would produce a high quantity of output. The principle of division of labor initially proposed by Adam Smith (1776) was a cornerstone of Scientific Management. Work specialization was to provide savings because tasks were easy to learn, and unskilled (and cheap) workers could perform these simple tasks. In addition, Taylor recommended the use of scientific methods to gather, quantify and record information on the tasks being performed in order to develop better working methods and increase management control over the production system. Such a system could guarantee a specific quantity of output. However, Taylor recognized that quantity may be increased to the detriment of quality. Thus, he recommended the use of 'over-inspection' to ensure high output quality. The advent of large manufacturing production units precipitated the development of inspection procedures. The application of statistical techniques to quality control further developed the techniques of the inspection function. Statistical process control makes use of basic statistics (frequency distributions, histograms, ranges, means, standard deviations) to summarize process information. The amount of information needed to control phases of the process led theorists to study alternative sampling strategies. Once collected and summarized, this information can be charted and graphically presented in a way that allows detection and analysis of quality problems. Statistical theories provided the tools to facilitate the management and resolution of quality problems. Thus, there were parallel developments in management and statistics theories that dealt with quality control.

On one hand, early management theories were complemented by theories aimed at improving the quality of the workforce as well as the quality of working life. Among the numerous approaches, we can cite Theory Z (Ouchi, 1981) that originated from a study of managerial practices of Japanese companies and Social Learning Theory (Bandura, 1977) that originated from the field of social psychology and emphasized the concept of personal efficacy that may be associated with personal quality.

On the other hand, statistical methods have played a fundamental role during the last half century in putting the design, analysis, and control functions in manufacturing organization on a scientific footing. Rigorous methods using statistically-designed experiments to discover the relationships among process variables and final product quality characteristics were developed throughout the mid-20th century by statisticians including Fisher (1935), Plackett and Burman (1946), Box and Wilson (1951), and Box and Hunter (1961a,b). Box and Bisgaard (1987) summarized the scientific context of quality improvement. More recently, the use of statistical methods to aid the design of "robust" products and processes has been popularized in Japan and the U.S. by Taguchi (1986); see also Box, Bisgaard, and Fung (1988). Very simple graphical methods for summarizing and analyzing data were belatedly recognized in U.S. industry in the 1980's as enormously powerful tools for the diagnosis of quality problems. Of particular note are the "seven tools" of Ishikawa (1976). Deming (1982) played a determinant role in emphasizing the importance of statistics and constancy of purpose. Juran (1974) developed his quality trilogy and the project-by-project approach. Feigenbaum (1983) focused on total quality control and the cost of quality. Crosby (1979) popularized the concept of "zero-defect." Taguchi (1986) introduced the notion of loss function in the quality field.

Statisticians such as Deming (1986) and Juran (1964, 1974) tried to merge statistical concepts of variation with management principles into approaches to management of quality that are very popular in certain industries. Deming's and Juran's distinction between quality defects due to system problems and those due to worker problems reflects the distinction between variation due to common (system) causes and those due to special causes.

When the National Broadcasting Company (NBC) aired the film "If Japan Can, Why Can't We" in 1980, featuring Dr. Deming, interest in quality management increased in America. Several large American corporations, including the Nashua Corporation and Ford Motor Company began to develop programs and many more have followed. Today there are numerous companies that have embarked on quality improvement projects and some companies are beginning to establish quality management systems. Some examples include Hewlett Packard Company, Harley-Davidson, Ford Motor Company, General Motors, IBM, General Electric, Kodak, Motorola, Westinghouse, 3M, Globe Metallurgical Inc., and General Foods. One of the latest developments is the proposal for using quality management principles in the defense industry. An important element in this is the report "Concurrent Engineering," developed by the Institute for Defense Analysis and the Department of Defense (to be released in 1989) and the Air Force document R&M2000 (U.S. Air Force, 1987). However, even with these widespread initial efforts at quality management, American industry as a whole has not embraced the concepts of quality management, and this failure is a serious concern for our international competitiveness.

It would be wrong to give the impression that quality represents an entirely new theory of production management. While some of its tenets question existing approaches, most are complementary to existing management theory. Several theorists have proposed ways to achieve higher quality and output, including A. Smith, F. Taylor, H. Gantt, E. Deming, J. Juran, G. Taguchi, K. Ishikawa, and P. Drucker. If one were to examine the theorists superficially, one might suppose that they differ substantially in their proposals. Yet, underlying all of these theories is the belief in the need to fundamentally change the way in which the workplace is managed to provide better direction to the production process. Thus, while the means for achieving this fundamental change may differ, the basic philosophy that better management is required for improvement, along with specific tools to achieve improvements, is at the heart of each. They have proposed scientific, systematic methods for measuring, charting and testing the feasibility and effectiveness of various "techniques," "technologies," or organizational approaches. All believe in the importance of collecting data or information to define the "needs" and to measure the effectiveness of interventions. All underline the critical role of feedback to management, to professionals, and to workers so that continuous improvements can be made, and the same mistakes are not repeated. All espouse the critical need for top management commitment and support of the "new" concepts and the interventions. Many define a critical role for the employee in the definitions of need, and some in the execution of the interventions.

Even if these theories have some common management principles, there is a need for further theoretical research to assemble the different pieces of the puzzle and propose an integrated theory of management of quality. An integrated theory will be useful only to the extent that it is being successfully used and implemented by companies. The successful implementation of quality initiatives and programs is a difficult problem. Successful ways to implement quality programs, rational justification methods, and empirical long-term evaluation studies have to be developed to overcome resistance and make the quality movement a real change and not just a fad.

QUALITY: SPECIFIC PROBLEMS AND DIFFICULTIES

New Approach to Quality

Only a small percentage of American companies practice quality management, much less than in other industrialized nations that compete with us. A survey reported by Putnam (1985) indicated that only 1 out of 300 companies involved management and engineering staff in quality training. In Japan, the majority of managers and engineers are trained in quality, and quality management is embedded from the beginning of product development. In the U.S., the tendency is to have a quality control department, separate from other functions, which has to deal with quality problems as they occur. More companies need to become aware of the new quality paradigm, and its implications for business practices.

Leadership

The heart of the quality issue is leadership; in industry, labor and government. Such leadership must provide the "role models" and foster the "climate" for achieving high quality. The Japanese have made huge strides in quality by making it a national commitment and a way of life. A fundamental change in philosophy about quality was accomplished through changing the ideals of industry and government leadership. In the United States, effective businesses achieve quality by instilling a "corporate culture" that emphasizes quality as a corporate policy driven from the top (corporate leaders). Not all leaders are aware of the need for quality. Just as critical, many do not know what to do to achieve quality. Some are ignorant of the basic philosophy, principles and techniques that produce quality, and they must be educated and convinced.

Business Practices

Our business practice of emphasizing short term profit rather than long term gain adversely limits quality efforts. It has taken the Japanese decades to establish the type of corporate "culture" encountered in their successful companies. Short-term profit maximization undercuts processes prominent in these Japanese cultures, especially employee involvement, loyalty and trust. Several basic business practices of American companies have adversely affected quality. These include authoritarian management which limits employees' participation; after-the-fact inspections to catch defects, failure to trust employees as reflected in electronic performance monitoring, and emphasis on quick profits. It is difficult to build workforce loyalty and trust in organizations where the managers are continually changing. Likewise, employee involvement in workplace improvement is difficult to obtain when the production process and the employees are "squeezed" and employees receive little or no gain from improvements. Quality is built on cooperation and mutual benefit for management and labor, business and suppliers, industry and government, industry and educational institutions and government and educational institutions. These relationships take time to develop, prosper and mature. They cannot be achieved over the short-term. Currently, each is going about its business independently, without an understanding of how their independent actions can adversely affect other sectors. This lack of integration is costly, wasteful and counterproductive.

Rapid Development of New Products

In an attempt to keep ahead of the competition, companies around the globe strive to get new products into the marketplace as soon as possible. This has brought about a new approach for speeding-up the design process called "rapid prototyping." In this approach, new designs are developed and tested in a fraction of the time new products normally take, typically a few months. Time constraints have sometimes meant that serious design problems were not recognized. Speeding-up of new product introduction also requires the production process to come on-line as fast as possible. The production system no longer has time to work out the "bugs" that always accompany producing a new product. The reduction in design time, coupled with the lead time to get production processes ironed-out, are major causes of new product defects and reduced product quality. While the idea is to beat the competition to the marketplace and to establish a "beachhead," if the product is of poor quality, the advantage of early introduction can be quickly lost. In Japan, the Quality Function Deployment (QFD) system has been developed to cut problems in the design stages and shorten the development time, while assuring users' satisfaction (King, 1987). QFD is just beginning to be used in the United States.

External Environment, Political and Legal Factors

Contextual considerations include economic factors, such as employment levels; social factors, such as education; technological factors and political/legal factors. One example of how laws and policies can affect quality enhancement programs is the potential legal role of the National Labor Relations (NLR) Act and its National Labor Relations Board regarding productivity and quality-related employee participation groups. Bohlander et al. (1983) showed how employers could be in violation of the NLR Act through involvement in creating and maintaining employee participation programs, such as quality circles and quality-of-working-life programs. There is legal foundation for considering such programs labor organizations, especially if they deal with wages, hours, or working conditions. Furthermore, when employers create and maintain participation groups, violations of the NLR Act are likely if they deal with the above issues. On the other hand, if employers specify and reinforce that participation groups deal only with productivity and quality, legal difficulties may be avoidable. To date no legal precedent has been established.

The Changing Focus of the International Marketplace

The primary impetus for achieving quality of products, services and technologies is to capture markets at home and abroad which will improve the economic health of the nation and ensure full employment. For decades the United States had a competitive advantage in the knowledge, technology and skills to make the best and cheapest products. This has changed in the last two decades and our industries are experiencing a loss of both international and domestic markets. Part of our loss can be tied to a lack of national policies and actions that promote fundamental improvements in our competitiveness while other nations have established such policies and taken such actions. For example, the Japanese government through tax laws, price supports, regulatory practices and tariffs encourages expansion into foreign markets while protecting domestic markets. Similar actions occur where nations are allied for economic opportunity such as the European Common Market.

In the United States, internal competition among businesses is a cornerstone of our free market system. Some nations have turned this concept around by reducing internal competition and promoting competition in the international marketplace. National policies have been shaped to promote the competitiveness of products and services overseas. A prime example is labor laws which guarantee a plentiful supply of inexpensive employees. For example, electronics assembly, which existed primarily in the United States and Japan a decade ago, is now done primarily in Korea, Taiwan, Malaysia and Singapore where there is much cheaper labor. We will never be able to compete with these nations if labor cost is the determining factor, nor will we want to if it means lowering our standard of living just to be competitive. However, if the United States is to become more competitive, there must be fundamental changes in our national policies that will give us advantages that can overcome those of our competitors.

People, Management and Workforce

The importance of the role of people in quality has been recognized by the theorists and by most companies that have quality management programs. However, the unwillingness of some U.S. companies to involve all levels of employees in workplace activities is a major problem in instituting quality management. Likewise, the importance of job design, employee training and development, reward systems and labor/management relations have not been completely accepted by industry as critical aspects of quality at work. When it comes to labor/management relationships, unions are often suspicious of management initiatives for improving quality because they believe that these initiatives are attempts to reduce the influence of the union. Some quality efforts, e.g., quality circles, have emphasized obtaining good ideas from employees to improve profits, without providing rewards to the employees. On the other hand, it has been shown that union involvement in quality enhancement programs may have positive outcomes for the union itself, such as the potential for increased union membership (Thacker and Fields, 1987), and increased willingness for the rank-and-file to participate in union activities (Gardell, 1982). Cooperation between labor and management seems to be a success factor in quality enhancement programs (see for example Miljus, 1986).

Workforce and Education

Our workforce is not adequately educated, nor are they educated in a manner that promotes the processes required for improved quality. Such considerations as teamwork, improved written and oral expression, use of mathematics and science to solve "real-life" problems, and specific technical skills tied to current and new technology need more emphasis. Our school systems have myriad curricula, educational approaches and teaching techniques which vary from school district to school district and even within a school district. Almost no emphasis is put on technical training or skills training at the secondary school level. For students not planning on attending college, the availability of high school coursework that is applicable to their life and work after graduation is very limited.

Recently, media reports have highlighted the poor performance of American students at the primary and secondary school levels in mathematics when compared to students from other nations. In these international comparisons, American students have come in last place for all industrialized nations. Poor experiences have been noted for science knowledge comparisons as well. This has prompted a vast number of suggestions from experts on the need to change the American educational system. Most experts call for going "back to the basics" with increased emphasis on reading, writing, mathematics and sciences. The argument is made that the foundational skills established in primary and secondary education determine the extent of future learning at more advanced levels. The difficulty is that there are many experts and they do not agree on the best course of action. This has led to inaction.

On the whole our nation's technical schools are woefully inadequate when compared to those of Japan and Western Europe. We have far fewer schools and less technical resources in those schools. Our curricula need updating and improvement, as do the physical plants (particularly the equipment and technology) which are inadequate and outdated.

Where will all the professionals needed for this increased emphasis on quality come from? There are only a handful of degree programs that deal with quality management. Studies have indicated that this country faces a serious shortage of engineers and scientists in the coming century, particularly at the post-bachelors degree level (Engineering Education, 1987). A serious problem is that most American undergraduates do not go on for advanced degrees. Foreign nationals represent over fifty percent of the enrollment in our engineering, mathematics and science graduate degree programs. We are educating the world so that they can compete better against us.

A final educational issue is the competence of the nation's teachers to provide quality instruction. Several studies over the last few decades have shown that teaching is not attracting the brightest and the best of our young college graduates. The reasons for this include low pay, hostile students and parents and little job glamor. Industry is paying better salaries and providing better benefits. Because of a concern over the quality of instruction, some states have gone to teacher competency testing which is similar to professional licensing. Such testing is like after-the-fact inspection, where it is too late to build in quality after the product has been completed. As with defective products, poor teachers will have to be "taken apart and rebuilt." It is very costly to improve teachers after they have finished their education. The time for developing excellence is when they are being educated.

Workplace

The workplace has undergone substantial changes in the last two decades, some of which have adversely affected the quality of working life (Smith, 1986). More pressures for production, which may be caused by international competition; increased job stress; hostile takeovers with the potential for the splitting-up of corporate assets, have all created a work environment that defeats employee commitment to quality. Management theorists (see Neugarten, 1985) have recognized the need for a pleasant and rewarding job environment to motivate employees to quality performance. Yet there has never been a more stressful time in our nation's history as regards the workplace (Centers for Disease Control, 1986). There are still thousands of workplaces that do not invest in the comfort and satisfaction of their employees.

Technology

Technology has had a major influence on enhancing the productivity of American industry, especially in manufacturing, process industries, insurance, banking and finance. Many American companies are looking to information technology, electronic data processing, telecommunications, office automation, computer-integrated manufacturing, to win back their dominant position in the global marketplace. After huge investments, many companies have discovered that these powerful competitive tools have not met their expectations. Monger (1988) identifies three major interrelated sources of improper technology management that explains the loss of quality and productivity: low rate of technology absorption, high level of implementation failure, and poor handling of social consequences. The Task Force on Management of Technology commissioned by the National Research Council (1987) examined the state of research, education, and practice in management of technology. They found avoidance or poor understanding of the interrelationships between people and technological systems is a major failure factor, as well as lack of management support and involvement. Successful integration of new technology has the potential to sustain competitive advantage. However, new technology is not without its human costs (see Smith, 1985). These costs threaten to undermine the confidence of the workforce in the stability of their employment and the commitment of their employers to their welfare (OTA, 1984, 1985a, 1985b, 1985c, 1987; NRC, 1987; Henderson & Mowery, 1988; Cyert & Mowery, 1988; USDOL, 1988). Employers see technology as a way to reduce the cost of production by replacing expensive labor. Employees see the stability in their employment eroded by technology because of increased or new skill requirements and job loss. This kind of working environment breeds distrust and reduces employee commitment to participation and quality management. Many of our competitor countries provide employment guarantees either through the employer or government programs. In these countries, technology is used to increase the capabilities of the employee rather than to replace the employee. Thus, it can serve as a motivator and enhance commitment to high quality.

POLICY ISSUES

National policies must deal with actions that will improve the quality of our workforce and of working life, enhance the quality of our products, services and technologies, generate new technologies, provide technical assistance to industry and commerce, and establish the leadership to move into the next century of international competition. The following policy issues and proposals address ways to achieve improved quality at the workplace. We divide them into five categories: policies addressing the philosophy of quality, policies pertaining to the workforce and education, policies for improving the management of the workplace, policies regarding the conceptual base underlying management of quality, and, finally, policies for putting theory into practice. A general initial recommendation is to establish a taskforce to examine these policy recommendations, prioritize them, and make them operational in terms of concrete actions to be taken.

1. PHILOSOPHY OF QUALITY

Philosophy Policy 1. Institute New Federal Initiatives to Promote Quality

Establish a Presidential Commission with representation from the U.S. Department of Commerce, U.S. Department of Labor, Department of Defense, Internal Revenue Service, Department of Health and Human Services, business leaders, labor leaders and academics to explore ways to promote new business and government practices aimed at quality that will contribute to the long term stability of the nation's economy and jobs while providing a profit incentive to investors and owners. In addition to this commission, establish activities in several federal agencies for promoting workplace quality.

Encourage the newly-established White House Task Force on Competitiveness, which is headed by the Vice-President (Business Week, February 27, 1989), to promote quality as a necessary component of our international competitiveness. A recognition of the importance of quality by the White House will provide the national focus necessary to generate greater management and labor interest.

As an alternative or an adjunct to the Presidential Commission on Quality and Competitiveness, establish study groups for promoting quality at the National Academy of Sciences/Engineering and/or the Office of Technology Assessment of the U.S. Congress. These groups would provide a more scientific and theoretical focus than the Presidential Commission which would focus more on pragmatic issues of implementation.

In addition to these taskforce activities, quality programs should be established in several federal agencies which have important functions that influence the nation's quality. For instance, the Department of Labor has programs which regulate relationships between labor and management. These programs govern aspects of wages and benefits, responsibilities of labor and management, employment and unemployment, safety and health, and cooperative relationships. Underlying several of these programs are federal laws such as the National Labor Relations Act. Quality efforts require cooperation between labor and management, and demand participation of employees in the decision-making process. This requirements suggests new relationships will develop between management and labor. Some of these new relationships may be in violation of the National Labor Relations Act. It may be necessary to change this labor law to redefine the relationships between and responsibilities of each of the parties. We propose that the Department of Labor establish a taskforce to examine current labor laws in light of the needs of quality programs, to establish new relationships between labor and management. We further propose that the Department of Labor undertake research to define the need for new labor laws that may be necessary to protect employees when new quality initiatives are started. We also feel there is a need for research into the organizational strategies and structures that will promote effective quality management.

The Internal Revenue Service should undertake research to determine potential changes in the tax laws that will promote quality and international competitiveness. For instance, the costs of instituting quality programs could be covered by tax credits to offset short term loss of profits due to investments in quality. This could remove a major barrier to investments in quality caused by current business emphasis on short-term profit maximization. Other concepts that could act as an incentive to employers for promoting quality include accelerated write-off or depreciation for quality-related investments, and expanded tax write-off for rewards or bonuses given to employees for their quality efforts. These types of special tax treatment for specific investments have been shown to be effective in stimulating investment, if the investments can also be tied to improvements in workplace efficiency. Investment in quality management clearly meets this criteria.

The Department of Health and Human Services should establish quality management requirements for providers of medicare and medicaid treatment. Providers failing to meet these requirements would be subject to reductions in payments and fees for services. This program would serve as a model for private health care insurers for promoting quality health care. Such initiatives could be expected to improve health care, reduce health care costs and thereby reduce the cost of American products and services.

The Institute of Medicine (1986) published the results and recommendations of a study aimed at improving nursing home regulation. The study's purpose was to recommend changes in regulatory policies and procedures to enhance the ability of the regulatory system to assure that nursing home residents receive high quality care. Agencies such as the Health Care Financing Administration, the Joint Commission on

Accreditation of Hospitals, the Institute of Medicine, along with professional associations such as the American Medical Association, should pursue such initiatives with a different emphasis. Most of the recommendations generated from this study (Institute of Medicine, 1986) addressed legislative issues, certification regulations, and assessment procedures. In addition, studies are needed to identify policies that will stimulate quality initiatives and assist health care providers in promoting quality, rather than policies aiming at inspection and enforcement.

The Department of Defense and the National Aeronautics and Space Administration are this country's largest contractors for manufactured products and special services. These departments have unusual needs for high quality products and services since the consequences of poor quality could be disastrous. Each spends billions of dollars every year for ensuring quality, yet there is no evidence that these expenditures provide improved quality, performance or safety. These agencies still need major improvements in quality of the products and services they purchase. These improvements should start with the development of enhanced quality management programs which should be administratively managed at the highest levels of the agencies. These programs can be models for private industry. The Department of Defense has already taken steps to ensure that vendors use quality and reliability principles through such programs as the Air Force R & M 2000 process and the August 1988 Total Quality Management Master Plan. Similar requirements are under discussion in the Institute of Defense document

"Concurrent Engineering." More of these kinds of efforts need to be initiated.

The Department of Commerce should examine ways to promote quality management for enhancing the competitiveness of American industries. The recently established Malcolm Baldridge National Quality Award is one good first step. However, it is a small step that needs to be enlarged. Sometimes internal competition can be divisive and drive the costs of production up, to the disadvantage of international competitiveness. The Commerce Department should develop a recognition program for cooperative efforts among suppliers, manufacturers and marketers. The concept of an industry "family" where banks and financial institutions work closely with manufacturers, suppliers and marketers, who also work closely together has been extremely effective in Japan. Similar relationships could be effective for American companies engaged in international competition. The Commerce Department should sponsor research into mechanisms for promoting such cooperative efforts. Some of this research should be undertaken jointly with the Justice Department to examine how our laws on anti-trust would impact such arrangements. It may be pertinent to determine how our anti-trust laws affect our international competitiveness, and propose changes where necessary.

Philosophy Policy 2. Increase Quality Awareness

Widely disseminate ideas and educational materials about quality. This could be done through the Presidential Commission on Quality and Competitiveness and/or by a lead federal agency such as the Department of Labor or Commerce. These agencies should work with employer associations such as the U.S. Chamber of Commerce as well as labor organizations such as the AFL-CIO to promote member interest and involvement in quality. Cooperative government and private efforts need to be undertaken to demonstrate the importance of these issues and ideas.

The ideal approach would be for a Presidential Commission headed by a senior administration official to increase public interest in and awareness of the issue of quality and competitiveness. This would provide a national perspective and recognition of the importance of this issue. These efforts should be primarily promotional and could be supplemented by a special program that combines the efforts of the Departments of Commerce and Labor to develop specific materials for employers and labor unions to implement quality management. This program can collect, collate and disseminate materials from successful quality management efforts and quality research and academic programs on quality.

Several professional groups such as the American Statistical Association, the Institute of Industrial Engineers, the American Society for Quality Control, and the American Management Association hold annual conferences concerning productivity and quality improvement. These conferences are typically attended by technical personnel or mid-level managers, but almost never by top managers. While these conferences provide excellent information for their participants, the significant message of the need for more emphasis on quality and competitiveness is seldom communicated to top corporate executives. These conferences should be encouraged to continue and provide their valuable information to technical staff and managers. But, there also needs to be a mechanism that will stimulate top management interest and action. One concept is to hold an annual senior management and labor one-day seminar that provides state of the art information to CEOs and labor leaders. The Vice-President, as head of the White House Task Force on Competitiveness, would be an ideal keynote speaker. The format would be casual and relaxing to stimulate a pleasant environment free from the hassles of daily work and confrontation. This type of seminar could serve as a short "break" that would provide a chance to "charge batteries" while learning about important tools and concepts for improving quality at the workplace. Speakers would be world class experts who can provide a clear message in non-technical terms to stimulate intellectual interest and receptivity to further information. Talks probably should not exceed one hour and should be followed by a discussion among the participants. We suggest that no more than three speakers or messages be presented at a seminar to keep the information load manageable. It would be advantageous to have speakers with similar or complementary messages at each seminar to reinforce specific concepts and actions. A lead federal agency could sponsor the first seminar under the direction of the White House, with Presidential invitations to a selected group of initial participants. In later years, the professional associations and business and labor associations could take on responsibility for continuing the seminars, with technical federal agency assistance as needed.

Philosophy Policy 3. Motivate and Recognize

Provide recognition for individuals and companies that demonstrate leadership in the pursuit of quality by expanding the Department of Commerce's quality awards program to a greater number of companies, and by enhancing the efforts of professional societies such as the American Statistical Association and the Institute of Industrial Engineers. Current programs have only a limited number of awards, which substantially reduces the motivational potential particularly for small companies. Voluntary industry efforts to raise funding could be coupled with federal grants to increase the size of awards. Further efforts should be taken to reward individual employees and managers who make substantial contributions to quality improvement and competitiveness. For instance, the Vice-President of the United States could establish awards and have a special ceremony each year for both the companies and individuals who make contributions to quality.

In Japan, one of the most prestigious industrial awards is the "Deming" quality award given annually to companies that best exemplify principles of quality management. This award is much sought after and serves as a spur to corporate quality efforts. The Deming prize is not a contest but is awarded to those companies that meet a predefined standard. The effectiveness of this award to motivate a high percentage of Japanese companies is based on the "culture" that has developed in Japanese corporations around quality management. This "cultural emphasis" indicates that awareness of the need for and benefits of quality management are widespread in Japan. In America, the Baldridge award involves meeting a standard as well as competition since a maximum of two companies per category are awarded each year (Bush and Dooley, 1989). There is not the same high level of awareness of quality issues as in Japan, and so a single award or small number of awards does not have the same strong motivational power. What we need is to use awards to build awareness and recognition of the need for quality improvement. This suggests a strategy that provides awards for different purposes than just being "the best." Awards should be given not only for excellence of quality programs, but also for improvements in programs, for initiation of programs, and for sharing and assistance among programs. The idea is to stimulate corporate interest. An awards program should have local aspects that can lead to regional and then national recognition. This should be a recognition program and not a competition program. A basic concept should be to foster exchanges of ideas and techniques among companies to enhance our international competitiveness.

Philosophy Policy 4. Make Expertise Available

The federal government should develop a system for collecting information about quality management and making it available to companies, unions and educational institutions upon request. This clearing house activity should be supplemented by a program that digests quality management information and research, and provides guidance about how to implement or improve quality management methods. A basic problem faced by American industry is to determine how and when to apply the myriad of quality management concepts which are sometimes not in agreement. Techniques that have been successful in Japan may not be successful in America. A good example is "quality circles," which have not had as much success in America. Industry and commerce need help in sifting through the information and determining the best alternatives for their specific applications. Experts often have a vested interest in a specific approach, which limits their objectivity. Thus, it is important to have a central resource that can provide information and direction in a neutral way.

There is also a need for more professionals who can work on quality management. The Departments of Labor, Commerce and Education should develop programs that provide grants to colleges and universities as incentives for business schools and colleges of engineering to develop the technical experts and leaders that will be needed for increased quality management efforts. The demand for experts created by increased emphasis on quality could be huge, and currently there is a limited supply of such individuals. There are few quality programs at institutions of higher education. There is a need to substantially increase the pool of expertise, and this can best be accomplished in the short run by providing incentives for developing such programs. In the long run, industry demand will provide the impetus for these programs to continue.

2. WORKFORCE AND EDUCATION

A major problem with implementing quality management is the need to have a workforce that has the intelligence, skills and motivation to effectively participate. In this regard, America has a competitive advantage over the developing countries. But, the same may not be true when we are compared with other industrialized nations; and the comparative disadvantage may be increasing. Recent tests comparing grade school and high school students in industrialized countries on mathematics and science showed American students scored the poorest. If technology is to remain one of our main competitive advantages, then we need to have the requisite brainpower to continue to develop and apply new technology. This means an educated workforce.

Educational Policy 1.

Establish a program in the U.S. Department of Education for the improvement of the quality of national education. This program would provide guidance to local school districts, colleges and states regarding aspects of curricula, provide resources for curricula development, provide funding for teacher improvement in areas of national need, develop a program of educational grants to encourage bright students to pursue education and careers in teaching, develop guidance regarding national vocational education needs, provide grants for improving the equipment and technology used in instruction, and provide leadership in addressing national educational needs for improving the quality of our workforce. Some small efforts in this regard are already underway at the National Science Foundation.

One serious problem with this concept is the current widespread differences of opinion among experts as to the most fruitful ways to improve our educational system. While mathematics and science scores of our youngsters in primary and secondary schools generally fall behind those of other industrialized nations, there has been improvement in test scores over the last decade. If test scores are really an indication of the knowledge level of our children, then this improvement is promising and may mean that the current directions in education should be maintained. On the other hand, it is quite clear that our high school graduates who go directly into the workforce are lacking many of the skills necessary to be productive. Boeing Corporation has had to offer remedial high school level education to about half of the several thousand new high school graduates it hires each year, with about one quarter of these new hires needing help with basic literacy. This clearly shows a need for high schools to emphasize technical skill development for students not wishing to pursue college, and also requiring basic competencies in reading, writing and speaking for graduation.

At the post-secondary level there is a need to increase vocational training. Such training should be built on cooperative efforts with local industries to develop skills that are relevant to job needs and to provide internship opportunities. Such cooperative efforts could include continuing training for employees who need skill improvement or extended skill levels due to changes at the workplace. Cooperative efforts are currently underway in several states as part of recruitment packages to get industries to settle in or to expand or maintain operations in a state. These have been very effective in providing industry with the type of employees it needs and for building stability in employment for the workforce. A national effort should be considered to expand this concept and to shift the focus away from interstate competition for industry to national competition against other countries. This training support could provide special assistance in job creation to high unemployment areas.

There is also a great need to develop the engineers and scientists who will be inventing the new products and processes that will enhance our international competitiveness. We have already proposed a federal program of support for specialties concerned with quality management and quality education. But there is also a need to increase the number of engineers, scientists and managers. The best long-term approach is for marketplace demand to encourage colleges and universities to produce more of the needed professionals. This will be successful in the long term. However, industry is not always at the cutting edge of what is best, and sometimes industry is hesitant to move in new directions. To promote new initiatives in critical professions, the Federal Government should provide special funding to the National Science Foundation for educational and research programs.

At the heart of good education is excellence in teaching. Yet many of our brightest and most motivated young college graduates are not going into teaching careers because of poor pay and a growing lack of status and respect for teaching as a profession. Federal programs must be established to counteract this trend, and to attract our best young minds for careers as teachers in mathematics and sciences. Such programs could increase the extent and amount of forgivable loans for persons pursuing teaching careers in these areas. In addition, grants may be necessary on a short-term basis to encourage students into these fields.

Educational Policy 2.

Establish a program in the U.S. Department of Labor to provide guidance to the U.S. Department of Education, local school districts, colleges, states and individual employers about the needs for specific skills in the workforce, provide technical assistance and grants for specific skills training of the workforce that will enhance the nation's international competitiveness, and conduct research into efficiency, productivity, and quality issues. Some experimental programs to teach quality-related principles have been implemented in schools and provide a starting point (Sarazen, 1989).

Our most important and effective resource in meeting and beating international competition is our workforce, both labor and management. Their technical skills need to be improved and, once improved, kept current. There is also the need to develop other skills that lead to more effective quality management such as teamwork, problem solving, and leadership. All of these training activities take time away from production. Even though they develop skills that will enhance quality and competitiveness in the long run, they are expensive to implement in the short run. To encourage employers to undertake workforce improvement and training, special tax credits and/or write-offs should be given for providing training that will promote quality and competitiveness. The specific areas should be defined by the Department of Labor and approved by the Internal Revenue Service.

3. MANAGEMENT OF THE WORKPLACE

A significant issue in the improvement of quality is providing better management of the product development and production processes. All quality improvement theories recognize that quality begins with top management which sets the tone for other levels of management. Managers must not only be cognizant of the importance of quality, they must also be competent to promote quality. This suggests the need for upgrading the knowledge and skills of managers.

Management Improvement Policy 1.

The Department of Labor should expand current programs aimed at improving labor-management cooperative relationships by including issues of quality management. Quality management theories recognize the importance of worker input to the quality improvement process, and this concept should be promoted.

There is a need for fundamental changes in how our production resources are managed. The time when labor and management could afford to be divisive is gone. Many foreign firms do not suffer from adversarial labor-management relations, a distinct advantage for them, particularly when it comes to cooperative programs such as quality management. Employers must take the initiative in this arena by demonstrating that they are willing to share information with the workforce and to have labor input to decisions that influence working conditions, technology and jobs. Many employers already subscribe to some form of participative or cooperative management, yet they are a minority and more need to adopt this philosophy of management. America will only be able to be competitive by working smarter than our international competition, not by simply working harder. Working smarter means working together for the common good of the organization and its members. It means getting full contributions from everyone in the organization by utilizing the full range of skills and intellect. It means giving everyone a chance to participate.

Management Improvement Policy 2.

Government agencies should play a leadership role in improving in-house quality. The Internal Revenue Service started a quality program, which is now beginning to serve as a model for Federal agencies. Efforts such as the President's Council on Management Improvement and OMB Circular A-132, Federal Productivity and Quality Improvement in Service Delivery should be expanded. Government agencies should implement quality enhancement programs in their own facilities starting with pilot projects and then disseminating quality efforts throughout the entire organization. The leadership role taken by governmental agencies should serve as an incentive for other organizations to implement programs. In addition, these experiments should provide guidance and information on success factors, and on difficulties encountered in designing and implementing quality programs.

4. CONCEPTUAL BASE-BUILDING POLICIES

Conceptual Policy 1.

The Department of Labor should encourage theoretical research in the field of quality management. In particular, priority should be given to interdisciplinary research that tries to integrate different perspectives into a whole. In addition, applied research should be stimulated so that information and knowledge can be gathered on the success and failure factors in promoting quality. Theoretical and applied research that studies quality programs in service industries should be a priority over similar research in manufacturing. The Department of Labor should expand its efforts to collect information systematically on quality enhancement programs, for dissemination purposes.

To attain effective developments in the field of management of quality, strong collaborative efforts of government, industry, labor, and academia will be required. The key will be to build on knowledge of quality management with new research efforts, and to give the many issues involved in effective management of quality more emphasis in the training of both engineers and managers. Government will need to support research efforts in management of quality; industry will need to open companies to the researchers and be receptive to their findings; and academia will need to engage more actively in interdisciplinary research and education.

Conceptual Policy 2.

The National Science Foundation should support research in management of quality that would identify important issues and needs, address the problems mentioned above, begin to test existing solutions and approaches, and define new solutions. Support mechanisms should include long-term grants to individual academic researchers, funding small-group research (including joint university-industry efforts), funding interdisciplinary centers, financial support for masters and doctoral students, supporting post-doctoral fellowships, stimulating the interest of other agencies by holding interagency conferences, and disseminating the results of the funded programs. Additional selection criteria could be added for the rating of research proposals to address issues of quality improvement, quality management, and competitiveness.

Industry should commit itself to the process by recognizing the potential for management of quality to be improved through research and education, developing partnerships with universities, providing test sites for research experiments, employing graduates with good training in management of quality, and providing them with an environment suitable for them to make a contribution.

5. POLICIES FOR PUTTING THE THEORY INTO PRACTICE

Many experts and practitioners emphasize the difficulty in putting quality management theories into practice.

Practice Policy 1.

The U.S. Department of Labor should continue to keep track of companies and unions with cooperative experiments (see the directory entitled "Resource Guide to Labor-Management Cooperation"). The directory should include experiments emphasizing quality. A new classification, and an expansion of the directory, may be required, to include federal, state, city and local government programs. Some of these are unique in promoting community-wide efforts in quality improvement among private and public employers. This directory will be a valuable source of information for quality practitioners at all levels, and should include both successful and unsuccessful programs.

Practice Policy 2.

Networks of industry, union, academic, and government representatives should be and established at the national, regional, and/or state levels. Examples are the Madison Area Quality Improvement Network (MAQIN) and the Northeast Wisconsin Quality Improvement Network (NEWQIN). The goal of such efforts is to give plant managers, professionals, employees, and union representatives information on quality and productivity improvement experiences, and sources of support for designing and maintaining quality enhancement programs. Newsletters, seminars, library, and computerized data bases could be means of disseminating useful information on quality. The Arkansas Quality/Productivity Task Force is a network coordinated by the Arkansas Industrial Development Commission. Its goal is to improve the state's economic status by ensuring that companies stay competitive. The effectiveness of such efforts in gathering and disseminating useful information to quality practitioners should be assessed before similar state programs are encouraged.

States can also encourage local labor-management cooperation programs. Additional funding from the Federal government may be needed to pursue such efforts. Increased emphasis should be put by the supervising agency on trying to solve quality problems.

Companies could encourage the formation of local quality practitioners' "clubs" to share experiences and provide useful guidance to "beginners."

Practice Policy 3.

In certain countries, companies can have their quality enhancement programs audited and registered by a third-party assessment/registration agency. The ultimate goal is to encourage the dissemination of quality programs. There are various kinds of registration. The Coordinating Agency for Supplies Evaluation (CASE) was originally formed to deal with aerospace contractors. It keeps a public list of assessments carried out by its participating members, which can be purchased. The advantage of such registration is its simplicity. The disadvantage is that users of the list cannot be sure of the validity and reliability of the assessments. The Canadian Quality Management Institute, a branch of the Canadian Standards Association, accredits auditors who examine a company's quality program's conformance to specific standards. It is different from CASE because it not only registers quality programs but also assesses them. The weakness of such an agency is the risk of biased assessments because the agency not only provides assessment/registration services, but also consults in order to finance itself. The Swiss SQS organization for quality program assessment and registration is a conglomerate of recognized associations, government departments, and noncommercial institutions. They try to ensure that assessment and registration are unbiased and reliable.

Assessment/registration agencies base their evaluation on a set of criteria that quality programs must meet. Standards such as the ANSI/ASQC Q90-1987 through ANSI/ASQC Q94-1987 already define what is meant by the terms quality management, quality control, quality assurance, and quality system. The ISO 9000 series provides separate but complementary guidance for the quality management and quality system needs of a producer and supplier-customer contractual quality assurance situation. Since assessment/registration agencies use standards, the effectiveness of such standards should be continuously evaluated with changing economic, social, technological and legal conditions. However, standards are generally very hard to change and take a long time to develop. Thus, the Department of Labor should carefully examine existing assessment/registration agencies and current standards for auditing quality programs before encouraging the creation of such agencies.

REFERENCES

Allen, R. F. and Kraft, C. The Organizational Unconscious: How to Create the Corporate Culture You Want and Need. Englwood Cliffs, NJ: Prentice-Hall, 1982.

Aviation Week & Space Technology. "Defense Dept. Acknowledges Weak Quality Control." (January 19, 1987):23.

Bandura, A. Social Learning Theory, Englewood Cliffs: Prentice-Hall Inc., 1977.

Batson, R. G. "Discovered: Quality's Missing Link." Quality Progress (October 1988): 61-64.

Bemowski, K. "People: The Only Thing that Will Make Quality Work." Quality Progress (Sept. 1988): 63-67.

Berry, B. H. "Can GM Redesign the Manager-Worker Relationship?" Iron Age (Mar. 10, 1982).

Bohlander, G. W., Jorgenson, G. J., and Werther, W. B. Jr. "The Legal Side of Productivity Through Employee Involvement." National Productivity Review (Autumn 83): 394-401.

Boileau, Oliver C. "Improving Quality and Productivity at General Dynamics." Quality Progress (August 1984):16-20.

Box, G. E. P. and S. Bisgaard, "The Scientific Context of Quality Improvement, Quality Progress," 20, June 1987.

Box, G. E. P., S. Bisgaard and C. A. Fung, "An Explanation and Critique of Taguchi's Contributions to Quality Engineering, Quality and Reliability," Engineering International, 4:123-131, 1988.

Box, G. E. P. and J. S. Hunter, The 2k-p Fractional Factorial Designs, Part I, Technometrics, 3:311-351, 1961a.

Box, G. E. P. and J. S. Hunter, The 2k-p Fractional Factorial Designs, Part II, Technometrics, 3:449-458, 1961b.

Box, G. E. P. and K. B. Wilson, "On the Experimental Attainment of Optimum Conditions," Journal of the Royal Statistical Society, B(23):1-45, 1951.

Bush, D. and Dooley, K. "The Deming Prize and Baldridge Award: How They Compare." Quality Progress (January 1989):28-30.

Business Week . "What's Creating an 'Industrial Miracle' at Ford?" (July 30,1984).

Business Week. "White House Task Force on Competitiveness." (February 27, 1989).

Centers for Disease Control. "Leading Work-Related Diseases and Injuries." MMWR (October 3, 1986) 35(39):613-621.

Cole, R. E. "Improving Product Quality through Continuous Feedback." Management Review (October 1983):8-12.

Congressional Record, Malcolm Baldridge National Quality Award, January 6, 1987.

Crosby, P. B., Quality is Free, NewYork: McGraw-Hill, 1979.

Crosby, P. B. "The Management of Quality." Research Management (July 1982):10-12.

Crosby, P. B. "Quality's First Absolute: Take your Requirements Seriously." Purchasing (May 12, 1983):40.

Cyert, R. M. and Mowery, D. C. The Impact of Technological Change on Employment and Economic Growth. Cambridge, Massachusetts: Ballinger Publishing Company, 1988.

Deming, W. Edwards. Quality, Productivity, and Competitive Position, Cambridge, Mass. Massachusetts Institute of Technology, 1982.

Deming, W. Edwards. Out of the Crisis, Cambridge, Mass. Massachusetts Institute of Technology, 1986.

Drucker, P. F. Managing in Turbulent Times, New York: Harper & Row, 1980.

Eldridge, L. A. "Stress Quality-The Path to Productivity." The Magazine of Bank Administration, (June 1983):20-24.

"Engineering Education 2001." Engineering Education (November 1987):106-124.

Feigenbaum, A. V. Total Quality Control, New York: McGraw-Hill, 1983.

Feigenbaum, A. V. "ROI: How Long Before Quality Improvement Pays Off?" Quality Progress (February 1987):32-35.

Fisher, R. A. The Design of Experiments, Edinburgh: Oliver and Boyd, 1935.

Gardell, B. "Worker Participation and Autonomy: A Multilevel Approach to Democracy at the Workplace." International Journal of Health Services 12(1982):527-558.

Garvin, D. A. "Quality On The Line." Harvard Business Review (September-October 1983):65-75.

Garvin, D. A. "What Does 'Product Quality' Really Mean?" Sloan Management Review (Fall 1984), 25-43.

Goodman, Paul S. "Quality of Work Life Projects in the 1980's." Proceedings of the 1980 Spring Meeting of the Industrial Relations Research Association, (1980):487-494.

Guest, R. H. "Quality of Work Life-Learning From Tarrytown." Harvard Business Review, (July/Aug. 1979).

Henderson, B. E., and Mowery, D. C. The Future of Technology and Work, Washington: National Academy Press, 1988.

Horner, W. T. "Tarrytown: A Union Perspective." National Productivity Review (Winter, 1981-82).

Huizenga, T. P., K. Liepins and D. J. Pisano Jr. "Early Involvement-A Successful Product Design Depends on the Entire Organization Communicating and Working Together Throughout the Design Process." Quality Progress (June 1987):81-85.

Institute for Defense Analyses. The Role of Concurrent Engineering in Weapons System Acquisition, IDA Report R-338, unclassified, Institute for Defense Analyses, 1801 N. Beauregard St., Alexandria, VA 22311, 1989.

Institute of Medicine. Improving the Quality of Care in Nursing Homes, Washington: National Academy Press, 1986.

Ishikawa, K. Guide to Quality Control, Tokyo: Asian Productivity Organization, 1976.

Juran, J. M. Managerial Breakthrough, New York: McGraw Hill, 1964.

Juran, J. M. (ed.) Quality Control Handbook. Third Edition, 1974, New York: McGraw Hill.

Katz, H. C., Kochan T. A., and Gobeille, K. R. "Industrial Relations Performance, Economic Performance, and QWl Programs: An Interplant Analysis." Industrial and Labor Relations Review, (Oct. 1983) 37:1.

King, R. "Listening to the Voice of the Customer: Using the Quality Function Deployment System." National Productivity Review (Summer 1987):277-281.

Kume, Hitoshi "Business Management and Quality Cost: The Japanese View." Quality Progress (May 1985):13-18.

Ledford, G. E. Jr., and Lawler, E. E., III. Quality of Work Life Programs, Coordination, and Productivity, Journal of Contemporary Business, (1982) Vol. 11, No. 2.

Maccoby, M. "Helping Labor and Management Set Up a Quality-of-Worklife Program." Monthly Labor Review, (Mar. 1984).

Miljus, R. C. "Key Ingredients in Cooperative Initiatives." Personnel (April 1986):69-73.

Monger, R. F. Mastering Technology, New York: The Free Press, 1988.

Morgan, James P. "Quality is Real; It isn't Goodness." Purchasing (November 5, 1987):38-43.

NRC - National Research Council. "Management of Technology: The Hidden Competitive Advantage," Washington D.C., National Academy Press, 1987.

Neugarten, D. A. "Strategies and Tactics for Productivity Improvement: Implications for Public Personnel Managers." Public Personnel Management (1985) Vol. 14(4), 417-428.

OTA. Computerized Manufacturing Automation. Washington, DC: U.S. Government Printing Office, 1984.

OTA. Information Technology R & D. Washington, DC: U.S. Government Printing Office, 1985a.

OTA. Automation of America's Offices. Washington, DC: U.S. Government Printing Office, 1985b.

OTA. Technology and Aging in America. Washington, DC: U.S. Government Printing Office, 1985c.

OTA. The Electronic Supervisor. Washington, DC: U.S. Government Printing Office, 1987.

Ouchi, W. G. Theory Z: How American Business Can Meet the Japanese Challenge. Reading, MA: Addison-Wesley, 1981.

Ozley, L. M. and Ball, J. S. "Quality of Work Life: Initiating Successful Efforts In Labor-Management Organizations." Personnel Administrator (May 1982).

Pfau, L. D. "Total Quality Management Gives Companies a Way to Enhance Position in Global Marketplace." Industrial Engineering (April 1989) Vol. 21(4), 17-21.

Plackett, R. L. and J. P. Burnam. The Design of Optimum Multifactorial Experiments, Biometrika, 33:305-325, 1946.

Putnam, Arnold O. "Industrial Engineering-A Look At The Future." Industrial Engineering, (December 1985):18-21.

Quality Progress. "Deming's Point Four: A Study." (December 1988):31-35.

Ryan, John "The Productivity/Quality Connection--Plugging In At Westinghouse Electric." Quality Progress (December 1983) 26-29.

Sarazen, J. S. "Schools Build In Quality." Quality Progress (January 1989):38-41.

Shewhart, W. A. Economic Control of Quality of Manufactured Product, New York: D. Van Nostrand Company, 1931.

Smith, A. The Wealth of Nations. Glasgow Edition, England, 1776.

Smith, M. J. "Sociotechnical Considerations In Robotics and Automation," Proceedings of the IEEE International Conference on Robotics and Automation (April 1986), 1112-1120.

Taguchi, G. Introduction to Quality Engineering: Designing Quality into Products and Processes, Asian Productivity Organization, New York: UNIPUB, 1986.

Takeuchi, H. and J. A. Quelch. "Quality is More Than Making a Good Product," Harvard Business Review, 139-145, July-August 1983.

Tavernier, G. "Awakening a Sleeping Giant...Ford's Employee Involvement Program." Management Review. (June 1981).

Taylor, F. W., The Principles of Scientific Management. first published in 1911, New York: Norton and Company, 1967.

Thacker, J. W. and M. W. Fields. "Union Involvement in Quality-of-Worklife Efforts: A Longitudinal Investigation." Personnel Psychology 40(1987):97-111.

U.S. Air Force. USAF R&M2000 Process, Headquarters, United States Air Force Office of the Special Assistant for R&M, Washington, D.C., October 1987.

U.S. Department of Labor. Opportunity 2000. Washington, DC: U.S. Government Printing Office, 1988.

Voos, Paula B. "Managerial Perceptions of the Economic Impact of Labor Relations Programs." Industrial and Labor Relations Review 40(January 1987):195-208.

Werther, W. B. Jr. "Out of the Productivity Box." Business Horizons (Sept.-Oct. 1982).

West. "Quality Practitioners Express Their Opinions." Quality Progress, (January 1987):66-68.

37. IMPEDIMENTS TO INNOVATIVE EMPLOYEE RELATIONS ARRANGEMENTS

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INTRODUCTION

The widespread structural economic changes experienced by the United States since the late 1970's have had a marked impact on employee relations in this country (Block and McLennan, 1985; Kochan, Katz, and McKersie, 1986; Gershenfeld, 1987; Block, 1988). In attempting to a adapt to a newly competitive economic environment characterized by world-wide competition and deregulation, firms turned to their employee relations systems as important vehicles for making the adjustments that would permit them to survive. In many cases this meant attempting to develop innovative and cooperative employee relations arrangements. In other cases, however, it meant engaging in large scale layoffs and other disputes with employees in an attempt to reduce labor costs. The conflict that resulted in these latter situations had severe impacts on employees and communities (Bluestone and Harrison, 1982).

Given the high social costs associated with economic adjustment through worker-management conflict, policy makers at the Federal (primarily the U.S. Department of Labor and Federal Mediation and Conciliation Service) and State levels began to inquire how employers and employees may be encouraged to adapt to changing economic conditions through innovation and cooperation rather than conflict. One category of policy response has been to attempt to encourage managers and workers and their representatives to develop innovative ways of cooperating to reduce costs (Cleveland, 1987; Block, Kleiner, Roomkin, and Salsburg, 1987). A second category of public response has been to attempt to determine whether or not there are aspects of United States labor and employment policy that discourage innovation and cooperation, and, if so, explore whether there should be changes (U.S. Department of Labor, 1986).

The purpose of this paper is to extend this latter work. Our operating assumption in this analysis is that it is not appropriate for government to force the parties to an employment relationship to cooperate or innovate. It is appropriate however, for government policy to state that negotiation, innovation, and possibly, cooperation between labor and management is the preferred method of adjusting to economic change and resolving disputes. Accordingly, an appropriate role for government is to increase incentives for the parties to work together and decrease incentives for the parties to resolve conflicts through the exercise of legal rights.

This paper presents a set of policy recommendations in the unionized and nonunion sectors that would aid in moving government toward such a role. In the unionized sector, this paper recommends making changes in the National Labor Relations Act so that the incentive for employers to negotiate with unions would be increased, and the incentive to use legal conflict to obtain preferred outcomes decreased.

In the nonunion sector, this paper recommends that the government develop a policy of deferral to internal corporate complaint systems so that these systems would be somewhat insulated from legal challenge, thus encouraging employers to establish such systems.

A governmental labor policy that would discourage the use of conflict has at least two advantages. One has been already noted; the reduction in social costs associated with large scale layoffs and plant closings.[1] A second advantage would be through savings in the use of public judicial and administrative resources that are used when private labor and employment disputes are resolved through the exercise of legal rights. Decentralizing the dispute resolution process by encouraging these disputes to be settled by the affected parties using their own private mechanisms would aid in reducing the congestion in the legal system.

This paper will attempt to analyze the incentives of employers, workers, and unions to resolve differences through bilateral negotiations on the one hand - a necessary condition for innovation and cooperation, and through the exercise of legal rights, on the other - the antithesis of cooperation. Part II of the paper will develop a generalized framework for analyzing the decision to engage in bilateralism or legalism in an industrial relations system in which the law is the major vehicle for resolving conflicts. Part III will apply that framework to labor-management relations in the unionized sector and to employee relations in the nonunion sector. Part IV will present conclusions and policy recommendations.

FRAMEWORK

Modes of Dispute Resolution

For the purposes of this analysis, labor and employment conflict will be defined as occurring when an employer and an employee or many of its employees or a union find themselves in a dispute, disagreement, or a new divergence of interest because of changed conditions. When such a disagreement occurs, there are two broad categories of methods by which the dispute can be resolved. For the purposes of this analysis, they can be categorized as bilateral and unilateral. The bilateral method of resolution may be defined as occurring when the parties negotiate to resolve the matter. The key characteristic of bilateralism is that it involves the effort of both parties to reach an agreement. The employer, on one hand and the employee, or employees, or union, on the other, must be willing to agree and possibly modify their original positions. The preferred result is a new agreement that ends the dispute.[2]

Bilateralism is a necessary condition for innovation and cooperation, as it involves the parties dealing directly with each other. While bilateralism in and of itself does not guarantee that innovation and cooperation will occur, innovation and cooperation cannot result when bilateralism is absent. For the remainder of the paper, the terms "bilateralism," "negotiations," and "working together" will be used interchangeably.

The second category of resolution methods may be defined as unilateralism. In unilateralism, the matter is resolved through one party exercising its legal rights and using the legal system to impose its will on the other party. This will be done either directly, through having the matter resolved through an administrative agency and/or the courts, or indirectly, through one side conceding to the other. This concession is based on a recognition by the conceding party that the other party has the law on its side and that litigation would be futile if it occurred.[3] For the remainder of this paper, the terms "unilateralism," "legalism," and the "exercise of legal rights" will be used interchangeably.

The Determinants of the Method of Dispute Resolution

The previous section pointed out that disputes or disagreements between employers and their employees/unions or individual employees can be resolved by negotiation or legalism. Most important for the purposes of this paper is to develop a framework to understand the factors that go into determining which dispute resolution method is adopted.

What determines the choice of dispute resolution mechanism? Each party will calculate, to the extent possible, the expected benefits associated with bilateralism or legalism, net of the costs of using each method. If the expected net benefits from negotiations exceed the expected net benefits from legalism for the party, the party will be willing to settle the dispute through negotiation. Conversely, if the expected net benefits from use of the legal system exceed the expected net benefits from negotiations, the party will prefer to settle the dispute through use of the legal system.

It is important to realize that the employer and the employee/employees/union each make a separate benefit calculus. Working together is, by definition, a joint activity. For it to occur requires each party to determine separately, based on its own individual calculus, that the benefits from working with the other party exceed the benefits from legalism. Only if both parties determine separately that the net benefits from working together exceed the net benefits from legalism will the parties negotiate.

Conversely, if only one side prefers legalism, the dispute will be settled in the legal system regardless of the calculus of the other side. This is because bringing a dispute into the legal system requires only unilateral action. Moreover, the principle of access to the legal system to have rights vindicated means that a party pursuing a legal outcome will have its voice heard. Indeed, because the legal system operates with the force of law, once it is invoked, or its invocation is threatened, it dominates the dispute resolution process and takes precedence over any informal processes that one party or the other may prefer. To put it another way, if one party prefers the use of the legal system and invokes it, there is no way for the other party, on its own, to move the dispute out of the legal system and toward more informal, bilateral cooperative methods of dispute resolution.

IMPACT OF THE LEGAL SYSTEM ON THE RELATIVE BENEFITS OF NEGOTIATION AND LEGALISM

The previous section of the paper developed a highly generalized framework for analyzing the choice of using negotiation or legalism as a means of settling disputes. This part of the paper will place this framework in the context of important disputes in the employment relationship. The first section will discuss the choice in employment relationships that are unionized. The second section will examine the choice in nonunion employment relationships.

The Choice of Dispute Resolution Procedures in the Unionized Sector

Of the two sectors, union and nonunion, the former has the more developed set of legal rules. This is because unionization is covered by one law - the National Labor Relations Act, as amended (NLRA). In addition, this law is administered by a single agency - the National Labor Relations Board (NLRB). This section of the paper will demonstrate how important legal doctrines affect the calculus of choice of dispute settlement procedures that can arise in common situations in a collective bargaining relationship.

Prior to addressing these issues, it is important to provide the reader with the basic conceptual underpinnings that guide this section of the paper. In our view, the willingness of unions and employers to recognize each other's institutional legitimacy is a necessary condition for innovation and cooperation in labor-management relations to occur. For the union, this requires a recognition that the employer's long-term viability is essential for the continued receipt and improvement of wages and working conditions. For the employer, it requires acceptance of the union's role as the collective bargaining representative of its employees and a commitment to avoid conduct which would interfere with or undermine the union's status as a representative of the workers. As will be seen, the policy recommendations in this portion of the paper depend on the acceptance of this principle.

The Mandatory-Permissive Distinction and Employer Decisions that Affect Employment

The NLRA has been interpreted to require bargaining only over terms and conditions of employment, issues that have been defined as mandatory under the NLRA. Issues other than terms or conditions of employment have been defined as permissive, with no obligation to bargain. Changes in the nature and operation of the business that are not related solely or primarily to labor cost considerations (matters that can be addressed through the collective bargaining process) are considered permissive. Thus, there is no requirement that the employer negotiate with a union over the decision to make these changes, even if employment would be affected by the decision.[4]

It is rare that labor costs are the sole reason why a facility might be viewed by an employer as noncompetitive. A judgement such as this is generally based on such factors as wages and labor costs, the skills and training of the workforce, the age and layout of the building, the stock of capital equipment, the employer's assessment of the product market, changes in the production process, etc. In such situations, the employer has no obligation to bargain with the union over the decision to close, although it must bargain with the union over the effects of the decision already made.

In situations like this, which might be thought of as just the type that could benefit from negotiations leading to possible innovation and cooperation, the law encourages employer unilateral action wherein the employer exercises its legal rights to simply close the facility and move elsewhere. This way it can obtain everything it believes it needs without negotiating with the union, thereby eliminating any possibility for cooperation and innovation. Thus, in situations involving a potential plant closing, there are substantial benefits perceived by the employer associated with legalism. Even if the union were willing to negotiate and work with the employer to develop cooperative and innovative arrangements, such cooperation and innovation is not likely to occur.

In view of the foregoing, it is clear that the mandatory-permissive distinction provides a disincentive for the parties to resolve disputes through negotiation and an incentive to resolve disputes on the basis of legal rights. If the employer is successful in closing the facility without negotiating with the union, the (social) costs are borne by the employees, the community, and the taxpayers rather than the employer, who benefits from the closing.[5]

It is possible, however, that there will be a legal challenge by the union, as the importance of labor costs in the decision is likely to be a matter of disagreement. Thus, there is a substantial likelihood of resort to the legal system with the associated use of public resources to resolve the dispute. Once the employer asserts that it will close the plant on the basis of nonlabor, business considerations, the union has little reason to eschew an unfair labor practice charge under Section 8(a)(5) of the NLRA, as the employees will likely lose their jobs in any event. At the very least, public (NLRB) resources will be used by a regional office investigation of the charge. If the charge is found to have merit, even more legal resources will be used through a hearing before an administrative law judge (ALJ), an ALJ recommendation, a Board decision, a possible Court of Appeals decision, and a possible Supreme Court response to a request for review. In other words, there is the possibility of a large investment of public resources in resolving this essentially private dispute, no matter what the outcome.

Policy Recommendations

It is clear that the existence of the mandatory-permissive distinction results in a substantial incentive for the employer to exercise its legal rights and unilaterally close a plant for economic reasons. Conversely, there is a disincentive for the employer to engage in negotiations with the union over matters of plant closing for economic reasons. A similar calculus attends other employer decisions that affect employment, such as a partial closing or subcontracting for reasons other than labor costs. The results are the imposition of social costs on the community and the use of public resources to resolve what is essentially a private matter between an employer and the union.

Accordingly, we recommend that the mandatory-permissive distinction under Sections 8(a)(5) and 8(d) of the NLRA be eliminated, and that bargaining be required over all issues that affect employment. The only exceptions would be those issues that are illegal and those that go to the internal governance of each organization (i.e., selection of corporate management and Board of Directors, election of union officers, etc.). This would severely reduce the opportunity for the dispute to be resolved on the basis of the legal rights of the employer and maximize the probability that the matter would be resolved through negotiation and the private collective bargaining mechanism, thus reducing the expected social costs of the dispute. As there would be little legal uncertainty associated with the bargaining obligation when an employer decision affects employment, there would also be fewer legal challenges under Section 8(a)(5) associated with plant closings or employment reductions. The major issue in such decisions, the importance of labor costs in the decision, would no longer be relevant.[6]

Eliminating the mandatory-permissive distinction along the lines proposed here would privatize the settlement of the dispute, increasing the probability of a negotiated settlement, decreasing the expected social costs associated the decision, and decreasing the expected amount of public resources going to resolve the dispute. It is acknowledged that elimination of the mandatory-permissive distinction for employer decisions directly affecting employment will result in a decrease in the legal rights of employers vis-a-vis unions. But the disadvantage to employers is not as great as might be believed on a cursory analysis. A recommendation that the scope of bargaining be expanded does not mean that the obligations under Section 8(d) are increased. The obligation to bargain carries with it no obligation to agree with the proposals of the other side.

Even considering the reduction in employer prerogatives, it is argued that the social benefits to such a legal change in terms of the reduction in labor conflict, the increased probability of a privately negotiated settlements, and a reduction in the use of legal resources and legal congestion offset any additional private costs to employers. More fundamentally, however, it is also argued that if policy-makers wish to encourage labor-management negotiation and the possibility of innovation and cooperation, bargaining must be required over issues affecting the job status of workers.

Unionization at the "New Facility"

The previous discussion examined only the factors associated with the decision to work with the union at or to leave the original site. It did not examine what might happen at the site to which production might be moved. If production at the new site entailed few costs savings as compared to production at the old site, the incentive to cooperate at the old site would be enhanced. Conversely, the greater the potential savings at the new site, the greater the benefits associated with legalism.

If the employer is able to unilaterally determine its labor cost structure at the new site, this will encourage the employer to shift production because the certainty of the cost reduction is increased. This is more likely to occur if the facility to which production is shifted is nonunion and will remain nonunion over time. Thus, the greater the probability of preventing union organization at the new site, the greater the relative benefits from legalism vis-a-vis negotiation at the old site.

As the law of union organizing has evolved over the last forty years, there has been a consistent deference to employer interests vis-a-vis union interests that has made it increasingly difficult for unions to organize. The employer has virtually unlimited workday access to its employees, and may distribute whatever information it deems appropriate. The union has almost no right of access to the premises, which means that it is limited to meetings and home visits, both of which are voluntary. Although employees may discuss unionization, the information to which they are permitted access may be circumscribed by the employer's good faith business assertions of a need for confidentiality (Block and Wolkinson, 1986; Block, Wolkinson, and Kuhn, 1988).

Through these advantages, employers are able to resist union organizational drives. This phenomenon, combined with the employer's legal right to unilaterally close facilities, provides the firm contemplating closure and/or a transfer of operations with the incentive to act without negotiating with the union. While the union may desire to cooperate and bargain with the employer over appropriate changes in terms and conditions of employment at the old site, the benefits to the employer of negotiation and possible cooperation at the old site as compared to unilateral conduct premised on the assertion of legal rights seem to be quite small. In view of the foregoing, it is clear that the high probability of avoiding unionization at a new facility decreases the probability that the employer will negotiate with the union at the old facility, augmenting the negative impact on negotiations of the mandatory-permissive distinction.

Policy Recommendations

The previous discussion indicates that the evolution of the law on the scope of bargaining and the law of union organizing have given employers both the legal rights and the economic incentive to avoid negotiating with the union at a facility that may close. Even if the mandatory-permissive distinction were eliminated, as proposed above, and negotiations occurred over the plant closing, the ability of the employer to avoid unionization at the new facility would reduce the incentive of the employer to come to an agreement with the union at the old facility. Thus, while elimination of the mandatory-permissive distinction would provide the union the opportunity to negotiate with the employer over the closing, because the employer has no obligation to agree with the union, the probability is still quite high that the facility would be closed even after negotiations. This is because the chances are still high that the employer will perceive that it has greater flexibility and lower costs of production at the new (presumably nonunion) facility even if the union agrees to make concessions. Thus, the expected social costs associated with the plant closing, while less than in the presence of the mandatory-permissive distinction, are still quite high.

In order to further reduce the social costs of the plant closing and increase the probability that the costs of the closing are privatized, it is recommended that the definition of the bargaining unit be altered in cases involving a partial or complete facility closing in which production will be shifted to a newly established facility. In such situations, the bargaining unit should encompass the work done by a unit of employees or the products produced by a unit of employees and not be limited to workers employed at a geographic location.[7] Consistent with this, we therefore recommend that a principle analogous to that of bargaining unit accretion be applied, and that there be an initial presumption that the union at the "old facility" is the bargaining representative for the employees at the "new facility."[8]

This policy would have several advantages from the point of view of encouraging dispute resolution by those affected and minimizing the social costs of the employer's business decisions. First, it would provide further encouragement for the employer to negotiate with the union at the old facility in order to resolve the competitiveness problem. To the extent that the employer's unwillingness to come to an agreement and its interest in moving is driven in part by its desire to avoid the unionized workforce, a change in the definition of the bargaining unit as proposed would reduce the possibility for its decision to actually effectuate this desire. If this results in more intensive negotiations at the old site that result in the maintenance of production there, the social costs of the closing are reduced.

Even if the negotiations are unsuccessful in maintaining production at the old plant, the union's enhanced bargaining rights would increase the probability that the employees at the old plant would have opportunities to fill the positions at the new plant. Such an outcome would reduce the social costs of the closing by reducing the number of displaced workers that must be accommodated by the community. It would also mean that more of the costs of the transfer of production (i.e., moving expenses, costs associated with the inconvenience) than otherwise would be borne by the company, employees, and union that are most affected.

A concept of the bargaining unit such as is outlined here in combination with the proposed modification of the mandatory-permissive distinction would not prevent the employer from closing a facility or shifting production. Under this proposal, however, the decision would be driven primarily by nonlabor factors such as plant layout, geographic proximity to markets, capital equipment, etc. Under this proposal, the current employees would be given the option of working in the new facility.[9]

It is also important to point out that a bargaining unit proposal such as this does not mean that the union will necessarily represent the employees at the new facility over the long run. Union representation at the new facility would depend on such factors as the number of incumbent employees transferring to the new facility, the number of new hires at the new facility, and whether the old facility is part of a multi-plant bargaining unit. If the employer has a good faith doubt that the complement of employees at the new facility wishes to be represented by the union at the old facility, it has the right to have this doubt tested through regular NLRB procedures.

Finally, it should be noted that the type of dispute discussed in the last two subsections is at the cutting edge of adjustment to competitiveness. This scenario, repeated over and over again in plants around the country, is a common method by which corporations have adjusted to structural economic change and new competition in product markets. This is not to say that in every case in which wages and benefits are perceived as high and the capital stock is uncompetitive, the employer will close the plant and shift production to a nonunion facility. Clearly, however, the system encourages legalism rather than cooperation; therefore, it is not surprising that this scenario is common.[10]

Right of Permanent Replacement of Striking Employees

The previous discussion involves crucial but nonrecurring situations in the life of a collective bargaining relationship. Equally important is the situation associated with regular collective bargaining negotiations, especially at impasse. At impasse, the parties are permitted to use their legal bargaining weapons. The employer may implement its final preimpasse proposal. The union may engage in an economic strike and the employer may lock out. If the union engages in an economic strike, the employer may hire permanent replacements for the striking employees. If an employer chooses to permanently replace striking employees, striking employees must be given the option of returning to their positions at any time until they are replaced. Although strikers who are permanently replaced remain on a preferential hiring list indefinitely, there is no guarantee that they will ever be reinstated. The probability of reinstatement depends solely on the expansion of the employer's workforce.[11]

The legal right to hire permanent replacements provides the employer with the option of considering continuing production with employees who are willing to work for the employer's last preimpasse proposal and who might not wish to be represented by a union. To the extent that the employer believes it can be successful in hiring permanent replacements through exercise of its legal rights, its incentive to reach an agreement with the union is reduced. If the employer is able or appears able to produce with permanent replacements, the union has no choice but to accept the employer's final preimpasse proposal whether or not the replacements are actually hired, or whether or not the union actually went out on strike, since if the employer is successful in hiring permanent replacements it is unlikely that the employees will ever be reinstated. The existence of the legal right of the employer to permanently replace strikers and the possibility that it would be exercised caused the union to settle on the employer's terms. Whatever the outcome, replacement or union acquiescence, the possibility of negotiation between the employer and the union leading to labor management cooperation and innovation is decreased.

In this example, which we believe is not atypical, the legal doctrine involving bargaining weapons discourages cooperation by providing the employer with a disincentive to cooperate and an incentive to engage in legal conflict. Thus, the potential for innovation and cooperation in the relationship is reduced.

Policy Recommendations

Although the social costs of permanently replacing strikers are not nearly so great as the social costs associated with the closing of a facility,[12] as noted, the right to permanently replace strikers may lead to more labor conflict than would otherwise occur, as the employer has a means of moving toward nonunion status. This result is inconsistent with the rationale for permitting the employer to hire permanent replacements, with is the maintenance of production during a strike.

Accordingly, we propose that the NLRA be amended to permit employers to hire only temporary replacements during an economic strike. This would permit the employer to attempt to exercise its right to maintain production during the strike while at the same time reducing, if not eliminating, the probability that the employer can use the strike to avoid coming to an agreement with the union. After the strike ends, the employer would be required to reinstate the strikers with the option of placing the temporary replacements on a preferential hiring list. Thus, the status of the union would be secure, and there would be an increased incentive on the part of the employer to engage in bilateralism with the union.

It may be argued that the proposal to permit the employer to hire only temporary replacements would make it more difficult to maintain production during the strike as compared to the situation when it may hire permanent replacements, thereby increasing the costs imposed on employers. Regarding the additional costs on employers, we are unaware of any evidence to support the notion that an employer must offer permanent tenure in order to guarantee for itself a sufficient number of workers to maintain production during a strike. Furthermore, where labor unions are strong and the supply of labor low, it is unlikely that employers will be able to hire either permanent or temporary workers. Conversely, where the supply of labor is plentiful, there is no necessary reason why an offer of job permanency is necessary to attract labor.

It should be also noted that employers continue to have a set of tools that would permit them to operate, or at least to service customers, during a strike. In addition to hiring temporary replacements, management may assign nonbargaining unit personnel to do the work and may assign work to another facility or subsidiary. It may also stockpile inventory prior to the strike in order to maintain customer service.

Although these weapons weaken the union's collective bargaining power by permitting the employer to maintain production and/or customer service during a strike, none of these weapons threatens the union's status as a collective bargaining representative, nor the jobs of the strikers. When these weapons are used, once the strike is over, the situation returns to the status quo in that the strikers return to work and the union continues to represent the employees.

Overall, in our judgement, the right of employers to permanently replace strikers is one of the major legal obstacles to labor-management innovation and cooperation. It is inconsistent with the mutual respect for institutional legitimacy that is necessary for cooperation to occur. It has the potential for destroying the union, the actor with whom public policy is supposedly attempting to encourage the employer to innovate. Thus, it is believed that any costs to employers resulting from a less potent arsenal of bargaining weapons is more than offset by the potential benefits associated with an increased probability of labor-management innovation and cooperation.

The Impact of the Law of Employer Domination and Assistance to Unions - Section 8(a)(2)

The impact of Section 8(a)(2) of the NLRA on labor-management innovation and cooperation has been the subject of much debate over the last several years. This appears to be the result of at least two factors. First, the precise wording of Section 8(a)(2) - that "(i)t shall be an unfair labor practice for an employer to dominate or interfere with the formation or administration of any labor organization or contribute financial or other support to it" - would seem to suggest that, at the very least, Congress did not anticipate cooperative arrangements between unions and management and did not desire a close alignment between the two parties. It is well established, however, that the purpose of Section 8(a)(2) was to outlaw company unions - labor organizations established or supported by the company for the purpose of averting employee representation by an independent labor organization. Similarly, it was also meant to keep employers out of the determination as to which union should represent employees when more than one union was involved in the representation dispute.

The issue, then, appears to be basically one of intent and employer motivation. Is the employer's cooperation for the purpose of undermining the independence of the labor organization? The U.S. Department of Labor analysis of the cases under Section 8(a)(2) strongly suggests that the Board and the courts have been successful in determining the answer to these questions in most cases, generally finding a violation where there was unlawful intent and finding no violation in the absence of intent (U.S. Department of Labor, 1986).

Thus, Section 8(a)(2) appears to be neutral on the matter of labor-management cooperation.

It is also clear, however, that the provision leaves room for legal debate and litigation, suggesting that if a union and employer wish to initiate labor-management cooperation, they run the risk of a legal challenge. To the extent that this results in greater costs to the parties and more uncertainty associated with labor-management cooperation than would otherwise exist, it reduces the expected benefits associated with such activity. Thus, the possibility of an 8(a)(2) charge could discourage labor-management cooperation.[13]

Policy Recommendations

Based on the foregoing, it appears that the potential legal uncertainty associated with labor-management cooperative arrangements may be a major impediment to labor-management innovation associated with Section 8(a)(2) of the NLRA. Accordingly, it is proposed that Section 8(a)(2) be amended to include an explicit statement that cooperative arrangements between unions/employees and employers shall not be considered as violations of the NLRA. This will reduce, if not eliminate the legal uncertainty of cooperative labor-management arrangements under Section 8(a)(2) of the NLRA.

The Grievance Procedure and Labor-Management Innovation.

A standard component of nearly all collective bargaining agreements is the adoption of grievance and arbitration procedures. In 1977, 98 percent of all U.S. contracts had grievance procedures, with 96 percent of these provisions culminating in final and binding arbitration by a mutually selected neutral arbitrator (U.S. Department of Labor, 1977). There is no indication that the spread of concession agreements in the early and mid-1980's resulted in an elimination of these procedures. As the grievance procedure, by its very nature, is a system of communication between employers, employees and union representatives it has the potential for being a vehicle that encourages workplace cooperation and innovation.

The availability of the grievance procedure and arbitration as a means of resolving disputes has been recognized by the NLRB in its policy of deferring unfair labor practice charges to the grievance adjudication process. This policy was first promulgated in Spielberg Manufacturing Co.,[14] where the NLRB ruled that it would defer to an existing arbitration award where the subject matter was the same as the unfair labor practice being charged, provided three conditions were met: 1) that the arbitration proceedings were fair and regular; 2) that all parties had agreed to be bound by the arbitration award; and 3) that the arbitration decision was not repugnant to the purposes and policies of the Act.

Sixteen years later, in Collyer Insulated Wire,[15] the NLRB significantly expanded its policy of deferral by requiring unions and employers to utilize their existing grievance arbitration procedure to resolve unfair labor practices that also raise questions of contract interpretation. The NLRB's plurality decision rested on the following assumptions: 1) that the courts have recognized a national policy of encouraging dispute resolutions through the grievance arbitration machinery; 2) that such a policy is endorsed by Section 203(d) of the Taft-Hartley Act which fosters the resolution of disputes through the "method agreed upon by the parties;" and 3) that disputes which, at their core, raised issues of contract interpretation, are better resolved by arbitrators who have developed special skills in resolving such matters.

It is clear that the Spielberg (post-arbitral deference) and Collyer (pre-arbitral deference) doctrines provide a mechanism by which the parties can resolve disputes on their own, thus creating an incentive to labor management cooperation. If one wanted to generalize, one could note that the Spielberg and Collyer doctrines involve the principle of deferral from the legal system to a private dispute settlement mechanism, under certain conditions. The major condition underlying the principle of deferral is that the private mechanism not unduly compromise the legal rights that the administrative agency (the NLRB) is charged with enforcing.

In terms of the model discussed above, the Spielberg and Collyer policies change the legalism-cooperation cost-benefit analysis of the parties by limiting, if not eliminating, the option of resolving the dispute through legal means. In essence, the NLRB is encouraging the parties to eschew the legal system in favor of the dispute resolution system that they created. It is one of those rare situations in the law governing the employment relationship - union or nonunion - in which the legal system is encouraging parties to resolve disputes in an nonlegalistic, nonadversarial manner.

The deferral principle in Collyer and Spielberg is likely to have its greatest impact in encouraging cooperation if the NLRB and the Courts, the arms of the adversarial system, truly give it deference. The narrower the scope of review, and the less likely either party is to generate a better decision from the Court and/or Board than from the grievance (and arbitration) procedure the more important the bilateral process of the grievance procedure in resolving the dispute.[16]

A narrow scope of review is most likely to be successful if there is a strong probability that the private system of dispute resolution generates results that are compatible, on an overall basis, with the results that would be generated by the administrative process. The empirical evidence that exists suggests that this has generally, but not totally, been the case under Collyer. The evidence suggests that regional offices of the NLRB only infrequently reject arbitration awards as incompatible with the Spielberg criteria, suggesting that the charging party's rights have been adequately safeguarded in arbitration. In the Detroit Regional Office over an 18-month period, 17 deferral cases culminated in arbitration awards. Of these 17, seven resulted in appeals to the Regional office. The Regional office issued a complaint in only two cases (Wolkinson, 1985). Similarly, a study of the Boston and Philadelphia Regional offices indicated a rejection of arbitration awards in only 9.5 of 103 cases that arose between January 1983 and June 1985 (Greenfield, 1988).

Spielberg reviews are limited to appeals of arbitration awards. A more comprehensive approach to evaluate the impact of Collyer on the parties' statutory rights compared the remedies unions achieved through grievance settlement or arbitration awards in deferred unfair labor practice cases considered meritorious by the Detroit Regional Office, with the remedies that same regional office would most likely have implemented in the absence of deferral. The data indicated that deferral most often produced statutory compatible decisions in 8(a)(3) (discrimination in employment) cases that were either settled within the grievance machinery or that were resolved on the bases of an arbitration award. Statutorily compatible settlements in 8(a)(3) cases were attributed to employer efforts to immunize themselves from further NLRB interventions, by the employer's concern that labor/management harmony might be threatened by the friction and antagonisms typically generated by continuous litigation, and the expansive reach of the just cause provision in the collective bargaining agreements (Wolkinson, 1985).

At the same time, the study suggested that the deferral of Section 8(a)(5) (refusal to bargain charges) may frequently result in decisions not compatible with statutory objectives, particularly in cases settled short of arbitration. Thus, no relief was obtained in a majority of refusal to bargain cases settled short of arbitration, although in these same cases, the regional office had found that violations had occurred. This outcome may reflect a strong reluctance of employers to reverse decisions when, in so doing, they would incur significant economic costs that typically arise when management reverses unilateral decisions concerning subcontracting, removal of machinery, termination of shifts, and elimination of benefits. Also in some of these cases arbitrators applied contract rules of construction that conflicted with statutory policy. Still, however, in half of the refusal to bargain cases studied deferral outcomes did produce results compatible with Board policy.

The foregoing discussion indicates that a policy of deferral to an internal dispute resolution system, with appropriate judicial and administrative oversight, can result in outcomes that are compatible with a statutory scheme.[17] This matter will be addressed further in policy recommendations in the concluding section of the paper.

The Arbitration Procedure: A Caveat

Although the grievance procedure may provide an alternative to the formal legal system as means of resolving disputes and thereby encourage cooperation innovation, informal resolution of labor disputes within the grievance procedure is not automatic. The grievance procedure, especially its arbitration component, can be extremely legalistic, and contain many of the trappings of a court of law. Indeed, it has been shown that when one of the parties to arbitration uses an attorney and the other party does not, the party that uses an attorney is more likely to have a superior outcome, from its point of view, other things equal (Block and Stieber, 1987).

Employers, either because of superior resources, inclination, or both, use attorneys in arbitration to a greater extent than unions. If it is assumed that attorneys, generally, are more likely to be legalistic or adversarial than nonattorneys, then it appears that employers benefit from making the grievance and arbitration procedure as legalistic as possible. If employers, who use attorneys, believe more often than unions that they can obtain a preferred outcome in the grievance procedure by going to arbitration with attorney representation, then there will be a disincentive in the system to resolve cases in the more cooperative mode of the prearbitral steps of the grievance procedure. If this occurs, the Collyer and Spielberg doctrines may only be partially successful in encouraging cooperation and innovation. They may keep cases from going before the formal legal system embodied by the NLRB; but cases may instead turn up in the informal, but still legalistic system of arbitration.[18]

The Choice of Dispute Resolution Procedures in the Nonunion Sector

Over the last two decades there has been reported a significant increase in the use by non-union firms of alternative dispute procedures to resolve employee complaints and grievances. One study reported that a majority of large firms have established some type of grievance mechanism for their unorganized workers (Freedman, 1979).

What accounts for the increase in the number of firms utilizing a non-union grievance procedure? Conference Board reports have suggested that management's primary objective has been to maintain the non-union status of their workforce (Freedman, 1985). While not discounting this phenomenon as a motivating factor, it is no less true that other central concerns underlie this development. The period of the 1970's and 1980's have witnessed the rapid decline in many jurisdictions of the employment-at-will doctrine. This decline is further reflected in the explosion of wrongful discharge suits in both state and federal courts.[19] To ward off such litigation, many firms have adopted alternative systems to resolve worker complaints in this area. Some firms, however, may also establish systems of alternative resolution as a part of a human resource approach to supervision which will increase the productivity of employees.[20]

Unlike the unionized sector, which has well established formal grievance procedures, nonunion procedures exhibit wide variation in formality. They include unstructured open-door policies, ombudsmen, systems of conciliation, peer review, and formal grievance mechanisms with and without arbitration as the final step. For the purposes of this study, the more formal system are of most interest, as they provide the most logical structure for an alternative to the use of legal remedies.

Legal Barriers to the Establishment of Nonunion Grievance Mechanisms

Section 2(5) of the National Labor Relations Act defines the term "labor organization" as:

> Any organization of any kind or any agency or employee representation committee or plan, in which employees participate and which exists for the purpose, in whole or in part, of dealing with employers concerning grievances, labor disputes, wages, rates of pay, hours of employment, or conditions of work.

In early cases, the NLRB held that the term "dealing" included various types of employee committees which discuss grievances and working conditions, although their deliberations fell short of actual bargaining. The Supreme Court in Cabot Carbon[21] confirmed the Board's policy by ruling that employee committees established to discuss grievances and working conditions constituted a labor organization and was therefore, subject to the legal restraints of Section 8(a)(2) prohibiting company-dominated unions. The Cabot Carbon precedent raised the question of whether or not grievance committees in non-union firms, composed of management and employees for the exclusive purpose of adjudicating grievances are labor organizations. If such a committee is, and the Board finds that it was controlled by management, the NLRB would then order the firm to disestablish it. As a result, the grievance committee would be directed to cease functioning.

Based on subsequent NLRB cases, it appears that joint grievance committees established in non-union settings are outside the scope of the statute. Thus, in the 1970s, the NLRB established an exception to the definition of "labor organization" found in Section 2(5). In several cases, the NLRB suggested that where management delegated to a group of workers' representatives authority previously or traditionally considered to be a management prerogative, such groups are not "labor organizations." For example, in Sparks Nuggett,[22] the NLRB found that an employees' council which was composed of two representatives of management and one designated employee that handled worker grievances, was not a labor organization. According to the Board, its function was strictly the adjudicatory - one of resolving employee grievances. It did not deal or interact with management on any other issue. On the basis of this decision and others, it would appear then that joint employer-employee grievance committees are not likely to fall within the scope of Section 2(5) if limited to hearing and resolving individual grievances.

Placed in the context of our earlier model, although non-union dispute resolution systems are promulgated by the employer, they facilitate employee-management discussion and negotiation over employment issues and grievances. They create a vehicle for resolving employment disputes within the firm and without resort to the legal system. As in grievance negotiations in unionized firms, these discussions may lead to agreements satisfactory to each party. Where such outcomes occur, the process of employee-management cooperation is certainly encouraged. At the same time, these informal dispute settlement mechanisms lack whatever protections the NLRA provides to the grievance and arbitration procedures under collective agreements via the Spielberg and Collyer doctrines.

Concerning non-union complaint mechanisms, two central issues remain open. (1) Must these procedures be used?; and (2) if they are used, what is the likelihood of a successful challenge in court to a decision made by one of these procedures? Regarding the first question, if there is no requirement that the procedure be used, then the procedure loses much of its force and legitimacy as a dispute resolution mechanism. Indeed, uncertainty involving this issue means that employees may be strategic in deciding when to use it, bringing complaints to the system when they believe their complaint will be upheld, but avoiding the system when they believe the system will find the complaint without merit. While an employer may require an employee to exhaust these procedures, it is unclear whether such an exhaustion requirement would be successful in court. Presumably, if the procedure were part of a contractual relationship between the employer and the employee, an exhaustion requirement might be upheld. To date, there is at least one court that has required exhaustion of internal non-union grievance procedures that have been set forth in an employee handbook.[23] On the other hand, claims rooted either in public policy or in statues will not likely be held subject to an exhaustion principle.[24] In what might be a model for other states, Montana's wrongful discharge statute requires that individuals exhaust "written internal procedures" before filing a wrongful discharge suit (Westin, 1988).

The second question involves the matter of whether courts will view the results of such a nonunion internal complaint procedure to be sufficiently credible as to preclude making an independent judgement on the employee's complaint. This issue is analogous to the deferral issue in arbitration that has been associated with the Spielberg and Collyer cases.[25] Underlying that issue is the fundamental question of whether a privately negotiated dispute resolution procedure can be a substitute for the decision of a governmental administrative agency and the courts in protecting the statutory and contractual rights of employees. In that sense, the deferral issue regarding grievance and arbitration procedures is analogous to the preclusion issue associated with nonunion employee complaint procedures. As discussed, research on the application of the Collyer doctrine has shown that these private procedures can generate results that are consistent with the outcomes of the legal system. In view of this research on deferral to arbitration, a relevant question to ask is whether or not deferral to these nonunion complaint procedures can result in similarly consistency between internal outcomes and legal outcomes?

To be sure, there are differences in the rationale underlying deferral to grievance and arbitration procedures and some kind of deferral to nonunion complaint procedures. The grievance and arbitration procedures in unionized setting are negotiated between an employer and the collective bargaining representative of its employees, a relationship that is created and usually certified by the NLRB pursuant to its authority under the NLRA. Thus, it is logical that the grievance procedure can be viewed as a reasonable substitute for NLRB or judicial decisionmaking, especially given the congressional recognition of the importance of dispute resolution procedures established by the parties.[26] As a result of this, the scope of review of the NLRB under Spielberg and Collyer is narrow. It is limited to assuring that the grievance procedures were fair, regular, and timely and that the decision was not repugnant to the NLRA.

Policy Recommendations

In view of the advantages in terms of the conservation of judicial resources, the possibility for firm innovation, and the overall success of the Collyer and Spielberg doctrines in generating outcomes compatible with the NLRA, it is recommended that the principle of deferral to internal nonunion complaint procedures be established. Because there is no statutory basis for the establishment of these procedures, a greater degree of judicial oversight than that used for grievance and arbitration procedures under Collyer and Spielberg is appropriate. A useful standard of review might be based on that suggested by commentators who have reviewed the few judicial decisions available on this issue. They have concluded that a decision reached in an internal complaint procedure may be given preclusive weight where the following conditions have been satisfied: 1) the decision maker was impartial and the individual was afforded due process; 2) the decision reached was based on a full record; 3) and the employee implicitly or expressly agreed to be bound by the results of the dispute settlement mechanism (McGill, 1988; Westin, 1988). A fourth criterion should also be considered; that the decision be consistent with public policy in the state in which the complaint arose.

We recommend that states and possibly the federal government enact legislation that would implement a policy of deferral of cases not otherwise governed by federal statutes (i.e., Title VII of the Civil Rights Act, Occupational Safety Health Act, etc.) to an internal corporate complaint procedure when one exists that has the characteristics outlined above. The deferral procedure could be as follows: when a suit is filed, the employer could request that the matter be remanded back to the internal procedure because the procedure, on its face, meets the standards of impartiality and employee consent. If the judge finds that the procedure does meet these standards, deferral would occur. A review of the decision would be based on an analysis of whether the employee was afforded due process, whether the decision was based on a full record, considered as a whole, and whether the decision was consistent with public policy or common law in the state. If one or more of these three criteria were not met, the case would be heard through the normal judicial procedures.

Enacting a policy such as this has several advantages. First, it encourages employers to adopt fair, impartial, internal complaint mechanisms, thus increasing the probability of private resolution of the matter through negotiation. Second, there is also the possibility that judicial resources can be conserved. Finally, even if the court decides against affirming the decision of the internal complaint procedure, the record of the procedure used may aid the court in deciding the case.[27]

Based on the foregoing, we believe there are sound reasons for adopting a policy that defers employment disputes in nonunion firms to internal complaint procedures where those exist. With appropriate judicial oversight, we believe that it can have the same success in the nonunion sector that it has had in the unionized sector.

CONCLUSIONS AND POLICY RECOMMENDATIONS

It is clear that the system of dispute resolution associated with the employment relations system in the United States contains substantial disincentives to resolve disputes through negotiation, and substantial incentives to resolve disputes through the exercise of the legal rights. As negotiation is a necessary condition for cooperation and innovation in employee relations, a system that places a premium on legalism in the employment relationship is inconsistent with a policy of encouraging innovation.

Several legal doctrines discourage innovation. In the unionized sector, the mandatory-permissive distinction permits some employers to exclude from negotiations decisions on capital investment and corporate strategy that can have adverse effects on employee job security. The law of union organizing creates a disincentive for some employers to negotiate with employees at a unionized plant if they are in a position to shift production to a nonunion plant. The right of employers to permanently replace striking employees may encourage some employers to engage in conflict with employees rather than working with employees, knowing that they may be able replace the unionized employees with employees who may work at inferior terms and conditions of employment and may not desire union representation.

There are also legal uncertainties associated with these programs that may impose costs on the parties who participate in them. The existence of the prohibition of employer assistance to labor organizations brings an element of legal uncertainty to cooperative arrangements, thus discouraging parties from initiating them and possible encouraging litigation.

In the nonunion sector, although many firms have adopted internal dispute resolution procedures, the legal status of the outcomes of these procedures is still an open question. The success of a suit challenging these procedures depends on the nature of the procedures and the jurisdiction in which the suit is brought. To the extent that an employee can use the legal system to overturn the results of these arrangements, employers will have less of an incentive to establish them.

Policy Recommendations

There are several policy implications that result from the analysis in this paper. But they are all grounded on one fundamental premise - there must be a serious reconsideration of the legal system as the ultimate arbiter of disputes within the employment and labor relations system in the United States. The legal system operates on the basis of institutionalized conflict and adversarialism. Conflict and adversarialism are the very antithesis of innovation and cooperation. To the extent that the principles of the legal system dominate dispute resolution at the workplace, there is unlikely to be any major shift in employment relations away from an adversarial mode and to the more bilateral modes that will encourage negotiation, cooperation and labor-management innovation.

Consistent with this we believe that there must be a change in the premises of labor policy. Government must state, as part of the findings of any legislation, that negotiation, cooperation, and the private resolution of labor and employment disputes are the preferred methods of resolving such disputes and adjusting to economic change. Government policy should discourage the resolution of labor and employment disputes through the exercise of legal rights and the use of the legal system. Use of the legal system rather than negotiation usually means that scarce public resources are used to resolve these essentially private matters. Moreover, exercise of legal rights generally results in communities and taxpayers bearing the costs of the adjustment.

Acceptance of this premise implies a new way of thinking about labor-management relations. Rather than considering whether labor or management gains or loses power from any policy change, it is important to think in terms of whether or not the changes will encourage labor and management in both the union and nonunion sector to resolve disputes on their own, thus encouraging negotiation and enhancing the probability for labor-management cooperation. Such a change in thinking is a necessary condition for any policy changes that will remove impediments to and encourage labor-management cooperation and innovation.

It must also be recognized that such a change will not be in the interest of employers who wish to retain their options vis-a-vis unions in the adversarial model. But such a view is fundamentally inconsistent with developing legislation and policy under the premise of encouraging cooperation and the private settlement of labor and employment disputes as the preferred method of dispute resolution. While it is clear that one cannot legislate cooperation between the labor and management or management willingness to provide employee due process on its own, one can put into place a legal system that encourages the parties to resolve their own disputes, makes it less advantageous for one party to resolve disputes through the legal system, and decreases the legal uncertainty associated with cooperative and innovative arrangements.

Specific Policy Recommendations

Specific policy recommendations have been outlined throughout the paper in the appropriate context. The recommendations will be repeated here with a very brief rationale. The reader should refer to the main body of the text for a more detailed explanation of the bases for these recommendations.

1. Modify the current mandatory-permissive distinction under the National Labor Relations Act so that all employer decisions with a direct impact on employment are subject to negotiation with the union. While admittedly reducing the scope of unilateral employer action, such a change will encourage employers and unions to resolve disputes around important issues such as plant closing through negotiation, thereby reducing the social costs of such decisions and the use of public legal resources to resolve these disputes.

2. In situations in which, after bargaining, it is clear that a facility must be closed and/or production shifted in order to remain competitive, define the bargaining unit as the work done or products produced rather than as employees at a geographic location. This would not only help ensure that the employer and the union made every attempt to maintain production at the old plant, it would also reduce the probability that the employer would shift production solely to avoid the union at the old facility. The employer would still reap all the nonlabor benefits of a new facility. A policy such as this would encourage innovative agreements such as that entered into by GM and the UAW for the Saturn plant in Tennessee. In that situation, current GM employees represented by the UAW were able to bid first on the Saturn jobs. Thus, the parties established an innovative way to develop a new production system and protect employee interests.

3. Permit employers to hire only temporary replacements for employees engaged in an economic strike. This will permit the employers to

continue production during a strike while maintaining the attachment between the union and the employer. It would also reduce the likelihood that a strike could be used to effectively terminate all the employees of the union and destroy the union.

4. Include an explicit statement in legislation that cooperative arrangements between unions/employees and employers shall not be considered as violations of the NLRA. This will reduce, if not eliminate the legal uncertainty under Section 8(a)(2) of the NLRA.

5. Establish the principle of deferral to internal complaint procedures in nonunion firms where such remedies exist. Possible standards might include the following; (a) the decision maker was impartial; (b) the employee was afforded due process; (c) the decision was based on a full record which included all points of view; (d) the employee had agreed to accept the results of the procedure; and (e) the decision was consistent with public policy in the state in which the complaint was brought. Such a principle would encourage nonunion employers to establish such procedures.

We believe that implementation of these policy recommendations would be a large step toward reducing the level of adversarialism in employment relations in the United States. To the extent this occurs, the probability for innovation in employee relations is greatly increased.

NOTES

1. The social costs associated with plant closings have already been acknowledged by policy makers by the enactment in 1988 of The Worker Adjustment and Retraining Notification Act which requires large firms to provide employees with sixty days notice for most plant closings.

2. For the purposes of this analysis, economic strike activity or a lockout in which work stops is considered bilateral activity. Although it is conflict in the traditional sense, it is a dispute resolution process in which both parties participate without the involvement of a third party that has not been called in by both sides. In essence, this kind of dispute is part and parcel of the traditional structure of industrial relations created by the National Labor Relations Act. See NLRB v. Insurance Agents International Union, 361 U.S. 477 (1960).

3. This discussion assumes that each party uses the legal system for its outcomes rather than for any benefits associated with using the procedure, per se.

4. See, for example, First National Maintenance Corporation v. NLRB, 42 U.S. 666 (1981) and Otis Elevator Company, 269 N.L.R.B. 891 (1964). See also, more generally, Donna Sockell, "The Scope of Mandatory-Permissive Bargaining: A Critique and a Proposal," Industrial and Labor Relations Review, Vol. 40, No. 1 (October 1986), pp. 19-34.

5. Bargaining over the effects of the plant closing, which is likely to address such issues as severance pay, transfer rights, retraining, etc., is not likely to cause a substantial reduction in the social costs of the closing, as the jobs are still gone. Moreover, in effects bargaining, as in any other bargaining, the employer has no obligation to agree to a union proposal, and union bargaining power is likely to be nonexistent at the time of a plant closing.

6. The increase in litigation and legal uncertainty associated with a subjective standard that is open to dispute was one of the major reasons that the Board used in determining that it would not regulate campaign tactics. See Midland National Life Insurance Company, 263 N.L.R.B. 127 (1982), and Shopping Kart Food Market 228 N.L.R.B. 1311 (1977).

7. For a comparable discussion involving production and nonproduction employees at Cummins Engine, see Peter Cappelli and Peter D. Sherer, "Spanning the Union/Nonunion Boundary," Industrial Relations, Vol. 28, No. 2 (Spring, 1989), pp. 206-26.

8. For a discussion of the principle of unit accretion under the NLRA, see for example, The Developing Labor Law, Second Edition, Volume I, Charles J. Morris, Editor-in-Chief (Washington, D.C. Bureau of National Affairs, 1983), pp. 369-71, 376-79 and The Developing Labor Law, Second Edition, Third Supplement, Stuart Linnick, Stephen D. Gordon, and Harold J. Datz, Editors-in-Chief (Washington, D.C. Bureau of National Affairs, 1988), p. 183.

9. This would permit the development of the type of innovative agreement negotiated by GM and the UAW for its Saturn plant in Tennessee. In that situation, GM decided to open a new facility and, along with the UAW, developed a system by which current UAW-represented employees could apply for jobs at the new plant.

10. The auto industry is an important example of an industry in which this did not occur. But the auto industry appears to be a situation in which access to suppliers plus an enormous investment in plant capacity required modernization of existing plant and locating many new facilities near those plants. Most industries are not under such constraints (Block and McLennan, 1985; Katz, 1985).

11. See NLRB v. Mackay Radio & Telegraph Co., 304 U.S. 333 (1938); American Shipbuilding Co. v. NLRB, 380 U.S. 300 (1965); NLRB v. Fleetwood Trailer Co., 389 U.S. 375 (1967). If an employer chooses to permanently replace striking employees, those employees must be given the option of returning to work. Any employees who are permanently replaced remain on a preferential hiring list indefinitely. Permanently replaced employees may vote in a representation election.

12. Although the social costs may be less than in the situation of a plant closing, they may not be negligible. If the permanently replaced employees are older and less employable outside the firm than their replacements, they may have fewer labor market options than the employees who replaced them. To that extent their jobs search is more

likely to place a burden on the community than the job search of the permanent replacements.

13. This legal uncertainty would also increase the incentive to litigate, thus increasing the use of public legal resources.

14. 112 N.L.R.B. 1080 (1956).

15. 192 N.L.R.B. 837 (1981).

16. It is reasonable to believe that one of the reasons for the overwhelming success of arbitration as a means of resolving disputes arising under collective agreements is because Courts may overturn arbitration awards on only the narrowest of grounds; i.e., that the arbitrator has exceeded his or her authority, that the arbitration award does not draw its essence from the collective bargaining agreement, or that the award is contrary to public policy. A reviewing court may not substitute its judgement for the judgement of the arbitrator merely because the court disagrees with the arbitrator's interpretation of the agreement or the arbitrator's conclusions from the record. See United Steelworkers of America v. Enterprise Wheel and Car Corp., 80 S. Ct. 1358 (1960) and United Paperworkers International Union v. Misco, 108 S. Ct. 364 (1987).

17. For a rigorous critique of the Board's current guidelines for reviewing arbitration awards, see Patricia Greenfield "The NLRB's Deferral to Arbitration Awards Before and After Olin: An Empirical

Analysis", Industrial and Labor Relations Review, Vol. 42, No. 1 (October, 1988), pp. 34-49.

18. At the same time, it is likely that arbitration outcomes following deferral are less inimicable to workplace cooperation that the result of formal litigation that might arise, for example, in judicial suits over breach of contract claims. For both parties, arbitration represents a more expeditious and less costly avenue of dispute intervention. Thus, a one-day hearing typical in arbitration can be contrasted with the days, if not weeks, expended in preparing for and arguing a case before district and appellate courts. Furthermore, the decision reached by arbitration is much more likely to be accepted by the parties than a court decision. The arbitration outcome is a method of resolution that the parties themselves have anticipated and agreed to in the collective bargaining agreement. On the other hand, the court award is that issued by a political appointee and, if accepted, is normally agreed to not voluntarily but under compulsion and out of the parties' recognition that a failure to do so will lead to potential citation for contempt. Additionally, the arbitrator, unlike a judge, is selected by both parties for his/her expertise and integrity as a neutral. To the degree that the arbitrator's award is grounded in logic and faithful to the agreement it may be accepted, even by the losing party.

19. While there were less than 200 such cases filed annually in the 1970's, there currently exists over 20,000 such cases pending in state courts. Simultaneously, the number of EEO cases has remained

extraordinarily large with approximately 119,000 charges being filed at both state and federal levels in 1986 and 1987 (Westin and Feliu, 1988).

20. Some research supports the notion that grievance procedures in a firm can contribute to employee morale that might be reflected in lower rates of turnover and increased productivity (Spencer, 1982; Katz, Kochan, and Gobielle, 1983; Ichniowski, 1986).

21. 360 U.S. 203 (1959).

22. 230 N.L.R.B. 275 (1983).

23. Schnelting v. Coors Distributing Co., 729 S.W. 2d 12 (MO. App. 1987).

24. Title v Bloomfield School District 156 Mich. App. 52 1986; Alexander v Gardner Denver Company 415 U.S. 361 (1976).

25. See, pp. 24-29, above, and associated endnotes.

26. Section 203(d) of the Labor-Management Relations Act states, in relevant part: "(f)inal adjustment by a method agreed upon by the parties is hereby declared to be the desirable method for settlement of grievance disputes arising over the application or interpretation of an existing collective bargaining agreement."

27. It is not coincidental that these are the same reasons that underlie Section 101(a)(4) of the Labor-Management Reporting and Disclosure Act, under which the courts may require that union members who wish to file suit against their union under that statute first

exhaust internal union remedies not to exceed four months. See Detroy v. American Guild of Variety Artists, 286 F.2d 75 (CA 2, 1961), cert. den. 366 U.S. 929 (1961).

REFERENCES

Block, Richard N. "American Industrial Relations in the 1980's: Transformation or Evolution?", paper presented at the Transformation of Industrial Relations, Bargaining Group Conference, Purdue University, May 6-7, 1988, forthcoming in Conference Proceedings.

Block, Richard N., Morris M. Kleiner, Myron Roomkin, and Sidney W. Salsburg, "Industrial Relations and the Performance of the Firm: An Overview," in Human Resources and the Performance of the Firm, Morris M. Kleiner, Richard N. Block, Myron Roomkin, and Sidney W. Salsburg, eds. Industrial Relations Research Association Series, Madison, Wis., Industrial Relations Research Association, 1987, pp. 319-43.

Block, Richard N. and Kenneth McLennan, "Structural Economic Change and Industrial Relations in the United States," in Industrial Relations in a Decade of Economic Change, Hervey Juris, Mark Thompson, and Wilbur Daniels, eds. Industrial Relations Research Association Series, Madison, Wis., Industrial Relations Research Association, 1985, pp. 337-82.

Block, Richard N. and Benjamin W. Wolkinson. "Delay in the Union Election Campaign Revisited: A Theoretical and Empirical Analysis," in Advances in Industrial and Labor Relations, Vol. 3, 1986, David B. Lipsky and David Lewin, eds. Greenwich, Conn., JAI Press, Inc., 1986.

Block, Richard N. and Jack Stieber, "The Impact of Attorneys and Arbitrators on Arbitration Awards". Industrial and Labor Relations Review, Vol. 40, No. 4 (July 1987), pp. 543-55.

Block, Richard N., Benjamin W. Wolkinson, and James W. Kuhn. "The Relative Status of Employers, Unions and Employees in Law of Union Organizing." Industrial Relations Law Journal, Vol. 10, No. 2 (1988), pp. 220-40

Bluestone, Barry and Bennett Harrison. The Deindustrialization of America. New York, Basic Books, 1982.

Cappelli, Peter and Peter D. Sherer, "Spanning the Union/Nonunion Boundary," Industrial Relations, Vol. 28, No. 2 (Spring 1989), pp. 206-26.

Cleveland, John. "Common Ground . . . Mutual Gain: A Business Plan for Fostering Productive Work Relations in Michigan," Lansing, Mich.: Michigan Modernization Service, Michigan Department of Commerce, June, 1987.

The Developing Labor Law, Second Edition, Volume I, Charles J. Morris, Editor-in-Chief. Washington, D.C.: Bureau of National Affairs, 1983; and The Developing Labor Law, Second Edition, Third Supplement, Stuart Linnick, Stephen D. Gordon, and Harold J. Datz, Editors-in-Chief. Washington, D.C. Bureau of National Affairs, 1988.

Freedman, Audrey. Managing Labor Relations. The Conference Board, Report No. 765, 1979.

Freedman, Audrey. The New Look in Wage Policy and Employee Relations, Report No. 85, The Conference Board. New York: The Conference Board, 1985.

Gershenfeld, Walter. "Employee Participation in Firm Decisions," in Human Resources and the Performance of the Firm, Morris M. Kleiner, Richard N. Block, Myron Roomkin, and Sidney W. Salsburg, eds. Industrial Relations Research Association Series, Madison, Wis., Industrial Relations Research Association, 1987, pp. 123-58.

Greenfield, Patricia. "The NLRB's Deferral to Arbitration Before and After Olin: An Empirical Analysis," Industrial and Labor Relations Review, Vol. 42, No. 1 (October 1988), pp. 34-49.

Ichniowski, Casey. "The Effects of Grievance Activity on Productivity," Industrial and Labor Relations Review, Vol. 40, No. 1 (October 1986), pp. 75-89.

Holusha, John. "No Utopia, But to Workers It's a Job." The New York Times, January 29, 1989, Sec 3, p. 1.

Katz, Harry. Shifting Gears, Cambridge, Mass.: MIT Press, 1985.

Katz, Harry, Thomas A. Kochan, and Kenneth R. Gobeille, "Industrial Relations Performance, Economic Performance, and QWL Programs: An Interplant Analysis," Industrial and Labor Relations Review, Vol 37, No. 1 (October 1983), pp. 3-17.

Kochan, Thomas A., Harry C. Katz and Robert B. McKersie, The Transformation of American Industrial Relations, New York, Basic Books, 1986.

McGill, Linda D. "Nonunion Grievance and Arbitration Procedures." Labor and Employment Arbitration in the United States, Vol. 2, New York: Matthew Bender, 1988, pp. 72-1 to 72-31.

Spencer, Daniel. "Employee Voice and Employee Retention." Academy of Management Journal, Vol. 29 (September 1986), pp. 488-502.

Sockell, Donna. "The Scope of Mandatory Bargaining: A Critique and a Proposal." Industrial and Labor Relations Review, Vol. 40, No. 1, October, 1986, pp. 19-34.

U.S. Department of Labor, Bureau of Labor-Management Relations and Cooperative Programs, U.S. Labor Law and the Future of Labor-Management Cooperation, BLMR 104, 1986.

U.S. Department of Labor, Bureau of Labor Statistics, Characteristics of Major Collective Bargaining Agreements, Bulletin No. 1957, Wash., D.C., G.P.O. 1977.

Weiler, Paul. "Promises to Keep: Securing Workers' Rights to Self-Organization under the NLRA," Harvard Law Review, Vol. 96, June, 1983, pp. 1769-1827.

Westin, Alan F. and Alfred G. Feliu, Resolving Employment Disputes Without Litigation, Washington, D.C., Bureau of National Affairs, 1988.

Wolkinson, Benjamin W. "The Impact of the Collyer Policy of Deferral: An Empirical Study," Industrial and Labor Relations Review, Vol. 38, No. 3 (April 1985), pp. 371-91.

38. COOPERATIVE EFFORTS TO SOLVE EMPLOYMENT PROBLEMS

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38. COOPERATIVE EFFORTS TO SOLVE EMPLOYMENT PROBLEMS

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I. Introduction

The purpose of this report is to synthesize with a critical eye, the available evidence on cooperative union-management efforts to solve employment problems. As is laid out in my general theoretical framework discussed in Section II, this synthesis will examine the decision and implementation, maturation, and outcome stages of these cooperative activities. In Section III, the type, extent, and recency of cooperative activities is first examined, followed by a summary of the potential costs and benefits associated with cooperative activities vis-a-vis more traditional adversarial activities. The key foci of these efforts is then examined. Section III ends with a synthesis of the factors that appear to induce or impede the establishment of cooperative efforts. Subsequently, the key factors influencing the intensity and diffusion of cooperative efforts and the central problems encountered are addressed.

Section V focuses on the outcomes of these cooperative efforts; namely, performance, labor-management relations, and union leader and member outcomes. Finally, the last section is devoted to identifying the primary public policy implications and developing public strategies to assist the parties that choose to engage in cooperative efforts to solve employment problems.

II. A General Theoretical Framework

In order to synthesize and evaluate the literature and in order to understand the implications for public policy regarding cooperative efforts to solve employment problems, we first need a general theoretical framework to guide both analyses. We lack any professional consensus, however, on what that general theory should entail, especially as it applies to cooperative efforts. Furthermore, one central criticism of most of the existing literature on cooperative efforts is that it lacks analysis grounded in a more general theoretical framework. Instead, only pieces of the larger puzzle are examined. The result is that most scientific investigations of the evolution and impact of cooperative efforts on the resolution of employment problems are inadequately constructed.

There have been several recent efforts at developing a general theoretical framework by Barbash (1984), Kochan, Katz, McKersie (1986), and Cooke (1985, 1989,c). In all three models, environmental factors (economic, technical, and sociopolitical) play key roles in shaping the employment relationship and associated outcomes. In all three, certain organizational factors (e.g., collective bargaining structure, size, history, etc.) also shape the employment relationship and associated employment outcomes. Barbash and Cooke develop some fairly explicit assumptions of behavior of employers, employees, and union leaders. Within the environmental and organizational constraints, the parties go about maximizing or minimizing toward preferred optimal outcomes in the employment relationship. Barbash, however, is not explicit about how these behaviors within given constraints lead the parties to engage in cooperative efforts to solve employment problems. Although largely consistent with Barbash's and Cooke's models, Kochan, Katz, and McKersie fail to clearly state a full set of fundamental assumptions of behavior for all parties that would drive the employment relationship, and in turn explain employment related outcomes. Although (unlike Barbash) Kochan, Katz, and McKersie address cooperative efforts, except in a piecemeal fashion it is unclear how their theoretical framework predicts cooperation, the intensity and diffusion of those efforts, and associated outcomes.

With respect to the purpose of this synthesis of the literature and policy implications, let me briefly restate a central thesis of Cooke's (1989,c) general model, which has critical implications for understanding cooperative efforts to solve employment problems. In a nutshell, Cooke's central thesis is that the establishment, maintenance, diffusion, and ultimate outcomes of cooperative efforts hinges on a fairly delicate juxtapositioning of the processes and activities associated with the resolution of conflicts of interests via relative power, on one hand, with the pursuit of mutual interests via cooperative efforts, on the other hand.

A. A Brief Overview

In the discussion that follows, it is held that both management and the work force want to get "as-much-as-possible" for itself out of the employment relationship. This does not imply that each party is purely egoistic or downright greedy (although such behavior is not necessarily excluded). Nor does this imply that either party completely ignores the interests of the other party; it cannot without at some point jeopardizing its own welfare, or ultimately destroying the any employment relationship altogether. Getting as-much-as-possible simply implies that most people prefer more over less of a desired "pie," and that this basic desire largely governs each party's behavior.

In getting as-much-as-possible, two key dimensions of the employment relationship come into play: (1) the overall size or value of the pie available to the parties, and (2) the division of the pie between the parties. Until very recently, our own history indicates that management stakeholders were typically viewed as having sole responsibility for increasing the size or value of the pie via decisions related to operations, marketing, finance, and human resources. This view of management's exclusive domain has, historically at least, not only been widely shared by management and its stakeholders, but by the work force and union leaders as well. Concurrently, union leaders have been viewed as agents whose primary role has been to wrest from management as-much-as-possible for the work forces they represent, leaving to management the full responsibility and task of baking a bigger pie or else giving up some of the dessert it might otherwise enjoy. Hence, until late, management has baked the pie and fought with the union over how it was going to be divided (and in Doug Fraser's words, "even before it got baked").

Cooperative efforts to solve employment problems, in contrast, reflect a concerted effort in which the work force and its representatives share some of the responsibility and, hence, decision-making in baking the pie (ideally a larger pie, at a lower cost and/or of higher quality). The basic dilemma underlying collaboration is that it requires cooperation and trust. The table is laid, knives and forks clearly in sight. Each party knows from where the other is coming. When it comes to dividing the pie, however (especially when a 9-inch pie has been reduced to an 8-inch pie), the parties again pit themselves against one another. In turn, trust and cooperation diminish if not vanish, and there are losers and winners.

In the following subsection, we lay out a more thorough and rigorous theory than our metaphor of baking and dividing pies. Although the reader may find the exposition a bit abstract, over-simplified, and/or cumbersome for his or her tastes, the theoretical framework yields some fundamentally important propositions about collaboration, which in turn guide the synthesis and evaluation of the literature and has implications for policy.

B. A More Cumbersome Theoretical Analysis

In the abstract, one can, for the moment, imagine that there is a fixed sum of net gains derivable from a given employment relationship at any point in time. This sum of net gains is a function of both extrinsic rewards (e.g., profits and wages) and intrinsic rewards (e.g., recognition and autonomy). For ease in the discussion that follows, the combination of extrinsic and intrinsic rewards will be referred to as "utility."

This fixed sum of utility at any point in time is divided between (a) management (including all management stakeholders in the employment relationship), and (b) the work force (including its union representatives). Assuming that both management and the work force prefer more over less utility from the employment relationship, it follows that each party normally seeks to maximize its respective gains (hereafter called "absolute utility"). This dimension of the employment relationship is characterized by inherent conflicts of interest; what one party gets, the other loses or is foregone.

The absolute or relative amount of utility enjoyed by either party, however, is dependent on the total utility derivable from the employment relationship. It is this variable-sum dimension of the employment relationship that inhibits either party from exercising too much power over the division of total utility. Very importantly, it is this variable-sum dimension that may induce the parties to collaborate in ways that will increase total utility over time. The actors, however, do not always recognize the so-called "prisoner's dilemma" they may be facing and, in turn, recognize the potential mutual gains available through collaboration. Furthermore, even when the prisoner's dilemma is recognized by all parties, the parties are often unable to foster sufficient trust, which would allow them to establish a workable game plan designed to maximize their respective gains.

For the sake of simplicity, an underlying assumption of the theory is that both managers and workers seek to maximize their respective utilities derivable from the employment relationship. Toward the goal of maximization, the parties' behavior is dependent upon relative and total power. Relative power determines the distribution of a fixed sum of utility derivable from the employment relationship. Total power, on the other hand, determines the size of the total utility available to the two parties.

Relative Power: The relative power function is stated as:

$$\text{Relative Power}_i = f\left(\frac{1}{\text{cost of demands}_j} + \frac{\text{sources of power}_i}{\text{sources of power}_j} + \frac{\text{bargaining skills}_i}{\text{bargaining skills}_j}\right)$$

The first component of the relative power function envelops Chamberlain's (1958) notion of the "cost of agreeing," which maintains that the relative power of party i decreases as the cost of demands upon party j increase. The central point here is that either party has greater relative power to obtain smaller demands than larger ones (everything else constant). Hence, in comparing relative power between the parties, either over time or across organizations, by definition alone one must control for the actual or perceived costs of any demands.

The second component of the relative power function holds that as the sources of power available to party i to force its demands on party j increase (relative to the sources of power available to j to reject the demands of i), the relative power of i increases. With respect to Chamberlain's thesis, sources of power depict the ability of either party to impose costs of disagreeing upon the other party. The sources of power available to the parties are derived from the economic, sociopolitical, and technical environments of the employer and from organizational features of the employer and union.

Relative bargaining skills is the third component of the relative power function. In attempting to maximize the relative share of total utility, each party attempts to change the perceptions of the other regarding the sources of power available to each and the costs of demands on the other. Given the complexity and subjective nature inherent in the assessment of the sources of power and the pecuniary/non-pecuniary costs of demands, one can imagine that there is significant opportunity for changing perceptions (and hence demands). That party which is more skilled or adept at changing the perceptions of its opponent (of course to the given party's benefit) effectively increases the given party's relative power over the other. These bargaining skills are not only important during regular contract negotiations but also in the administration of contracts.

Total Power: Total utility derivable from the employment relationship is determined by the combination of human and technical capacity of the employing organization, constrained by the economic and sociopolitical environments of the organization. In attempting to maximize total utility, the parties rely on total organizational power, which is the ability of an organization to extract from its environment the kind and magnitude of benefits preferred.

The total organization power function is stated as:

$$\text{Total Organizational Power} = f\left(\frac{\text{Human} + \text{Technical Capacity of Organization}}{\text{Economic} + \text{Sociopolitical Environment Constraints}}\right)$$

The capacity of an organization to produce a product or provide a service at a profit is a function of both human capacity and technical capacity. Human capacity is the combined capacity of all stakeholders of the organization, from the top strategic decision-making offices down to the shop floor. Technical capacity represents the combination of all the types of technologies utilized throughout the organization, how these technologies are integrated, and how well these technologies and their integration are utilized in production or in the provision of services by all members of the organization. In addition to the human and technical capacity of an organization, total organizational power is determined by the constraints (or lack thereof) imposed by the economic and sociopolitical environments.

Relative Power v. Total Organizational Power: Based on perceptions of relative power and total power, workers and managers seeking to maximize their respective utilities must weigh the expected net gains from (a) relying solely on relative power or (b) also working jointly to increase total organizational power. Under the assumption of maximizing behavior, we must hold that each party would seek to utilize that combination of relative and total power it perceives as best serving its own interests. Hence, each party weighs the perceived costs and benefits of various combinations of relative and total power activities that could maximize its absolute utility. Both parties, however, must come or be forced to the same conclusion on the appropriate mix. In deciding that some degree of collaboration will lead to increased utility for each party, the parties are attempting to (a) increase organizational capacity and/or (b) reduce the constraints of the economic or sociopolitical environments directly.

A fundamental dilemma becomes apparent as the parties simultaneously weigh relative and total power options and requisite behavior. Both management and its stakeholders and the work force and its selected union representatives must sort through the options underlying both the relative and total power functions. In sorting through these options the parties, in effect, weigh the perceived potential costs and benefits (both pecuniary and non-pecuniary) of a wide range of possible actions, ranging from no collaboration to extensive collaboration. Assuming that the parties act rationally in selecting among available options, the parties will behave in ways at least perceived to be most beneficial to them (i.e., that which maximizes their respective utilities). This maximizing or optimizing behavior, however, is based on subjective expectations about various costs and benefits, is constrained by incomplete information and limited experience, and is sometimes influenced by inaccurate or misleading information. Furthermore, and very importantly, organizational decision-making is quite complex, as it involves a large cast of individuals with varying interests and varying degrees of authority and influence. Given that historically, employers and unions have largely attended to resolving conflicts of interest via the exercise of relative power, it would appear to be a safe assumption to hold that the draw of resolving conflicts of interest supersedes the draw of working jointly on mutual interests. A key challenge to unions and employers, therefore, is to find ways to juxtapose or balance the resolution of conflicts of interest with the pursuit of mutual interests.

Bearing these caveats in mind, the decision to collaborate must satisfy two general conditions: (1) each party (management, the work force, and union leadership) must perceive that the potential benefits from proposed joint activities outweigh the perceived costs; and (2) each party must perceive that the net benefit from collaboration is greater than the net benefit derived from exclusive utilization of relative power.

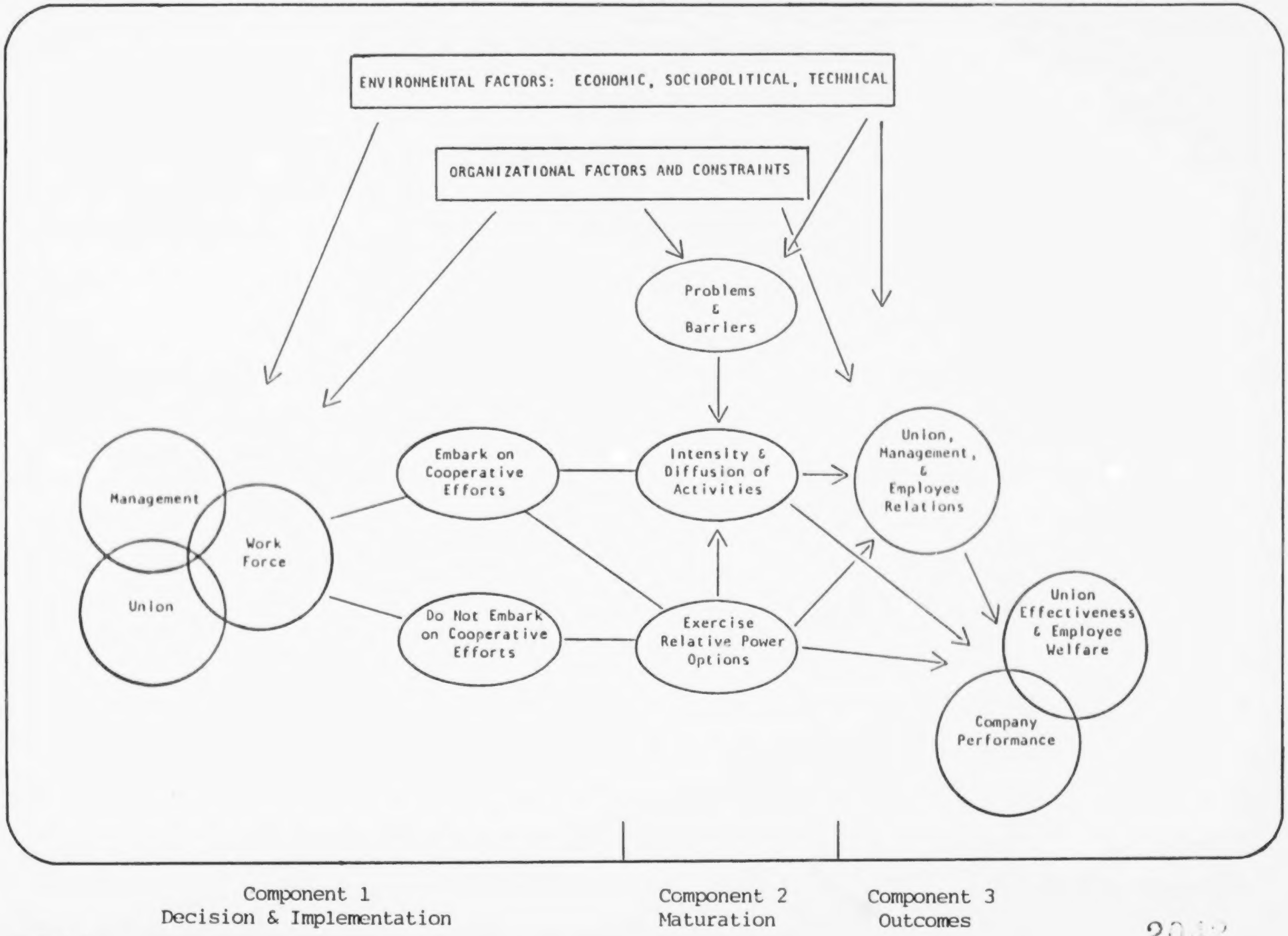
C. **Components of Analysis**

As illustrated in rudimentary form in Figure 1 above, there are three fundamental components to an analysis of cooperative efforts to solve employment problems. Within Component 1 (Decision and Implementation), we need to examine the decision to embark on cooperative efforts. Here, the parties (managers, employees, and union representatives) weigh the perceived costs and benefits of cooperative efforts vis-a-vis the perceived costs and benefits of maintaining the status quo relationship. In the synthesis and evaluation of the literature, we seek to identify the salient factors affecting these perceived costs and benefits that in turn, induce or impede the establishment of cooperative efforts to solve employment problems.

Within Component 2 (Maturation), we need to identify the salient factors that make for more or less intensive and diffused cooperative efforts. Here we will examine the environmental and organization factors imposed on the parties, the impact of various problems and barriers that undermine cooperative efforts, and the impact of the exercise of relative power options on cooperative activities.

Finally, within Component 3 (Outcomes) the research synthesis and evaluation is designed to assess the impact of cooperative efforts on solving employment problems, in particular, on improving the labor-management relationship and climate, and on enhancing company performance, union effectiveness, and employee welfare.

FIGURE 1


ENVIRONMENTAL FACTORS: ECONOMIC, SOCIOPOLITICAL, TECHNICAL
ORGANIZATIONAL FACTORS AND CONSTRAINTS
Problems & Barriers
Management
Union
Work Force
Embark on Cooperative Efforts
Do Not Embark on Cooperative Efforts
Intensity & Diffusion of Activities
Exercise Relative Power Options
Union, Management, & Employee Relations
Union Effectiveness & Employee Welfare
Company Performance
Component 1
Decision & Implementation
Component 2
Maturation
Component 3
Outcomes

2041

2042

III. The Decision to Engage In and the Implementation of Cooperative Efforts

In this section, I first examine the type, extent, and recency of formalized cooperative efforts as reported by various survey reports. Second, the literature addressing the factors that induce or impede the establishment of cooperative efforts is summarized. Third, the limited scientific investigation of the factors associated with the establishment of cooperative efforts is examined. Lastly, I summarize what appear to be the salient factors either inducing or impeding the establishment of formalized cooperative activities.

A. Type, Extent, and Recency of Cooperative Activities

Based on several recent surveys, Table 1 summarizes the extent of various types of formalized jointly administered union-management cooperative programs in the private sector. Table 2 provides a comparison of employee relations activities in small to medium sized union and nonunion establishments. The samples are unique (see bottom of tables) and, therefore, the survey responses do not reflect a random sample of all businesses. Nor are responses fully comparable across surveys since each survey instrument is unique. However, these surveys encompass the most extensive efforts to date at documentation of cooperative activities.

Along with several more narrowly focused data collections, these data provide at least a rough approximation of the type and extent of cooperative efforts designed to directly or indirectly resolve employment problems. These additional data collections include the following.

1. BNA report (1986): 1986 sample of bargaining agreements shows that 49% have contractual language covering joint committees on health and safety.

2. Weiss, BNA report (1980): 1980 sample of 152 unionized companies with alcohol assistance programs shows that 19% were jointly administered.

3. Cooke and Meyer (1989): 1986 sample of 120 large unionized manufacturing corporations shows that approximately 51% of unionized plants have established formalized joint team-based or committee-based programs (excluding health and safety).

4. New York Stock Exchange report (1982): 1982 sample of 1158 corporations shows that among companies with 500 or more employees, 44% had established quality circles, 16% had established "production teams," and 25% had established labor-management committees.

5. Kochan, McKersie, Chalykoff (1986): using Freedman's 1983 Conference Board Survey of 409 large companies, Kochan et.al. report that 67% of nonunion and 56% of unionized business units have established programs for which "employees meet in small groups to discuss production and quality."

6. Ichniowski, Delaney, Lewin (1989): 1987 sample of 296 nonunion and 152 unionized business units shows that 44% of nonunion and 49% of unionized business units have established "employee participation initiatives."

The identified surveys lead me to the following key but tentative summary:

-- Team-based cooperative efforts have become fairly widespread across companies (but not necessarily within companies) in recent years, with roughly between 40-50 percent of the unionized sector engaged in quality circle, QWL, and other employee involvement activities. These activities appear to be only slightly more widespread in nonunion than in unionized settings. Importantly, however, not all team-based activities in unionized establishments are jointly administered. My best guess is that about 1/2 to 2/3rds are jointly administered.

-- Approximately 1/3rd of unionized establishments have some form of union-management committee-based cooperative efforts ongoing. It appears that this form of collaboration reached a saturation point by the late 1970s.

-- Jointly administered health and safety programs are the most common form of cooperative efforts in unionized settings, with one of every two establishments engaging in these joint activities. It does not appear, however, that there has been any additional diffusion of these joint efforts since the late 1970s.

TABLE 1

TYPE AND EXTENT OF JOINT UNION-MANAGEMENT PROGRAMS AS REPORTED BY VARIOUS SURVEYS (Year of Survey in Parentheses)

Type of Activity	Conference Bd (1978)	Voos (1983-84)	Cooke (1986)	Cooke (1988)
Team-Based Programs	---	25%	38%	17%
Quality Circles	---	---	31%	---
QWL/EI	8%	---	19%	---
Work Teams	---	---	18%	---
Committee-Based Programs	---	---	32%	31%
Labor Management Committee	20%	28%	15%	---
Productivity Committees	10%	---	17%	---
Health & Safety Committees	55%	---	48%	40%
Training Committees	16%	---	15%	17%
Substance Abuse Committees	---	---	21%	24%
Gainsharing Program (with employee involvement)	---	13%[a]	7%	1%
Profit Sharing Program (with employee involvement)	---		6%	1%
Stock Ownership (with employee involvement)	---	7%[b]	6%	1%
Sample Size	668	343	234	70
Average Company Size	13,860	417	2,280	174
% in Manufacturing	66%	83%	100%	100%

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[a] Voos (1987) combines gainsharing and profit sharing programs, and includes programs with and without formal employee involvement activities.

[b] Includes programs with and without formal employee involvement activities.

TABLE 2

SELECTED EMPLOYEE RELATIONS PROGRAMS: A UNION-NONUNION COMPARISON

	All Establishments	Nonunion	Unionized Establishments	
Program	% with Program	% with Program	% with Program	% with Joint Program
Team-Based	45%	52%	40%	17%
L-M Committee-Based	NA	NA	31%	31%
Health and Safety	67%	63%	71%	40%
Training	75%	70%	80%	17%
Substance Abuse	35%	20%	49%	24%
General Employee Assistance	38%	39%	38%	17%
Profit Sharing	41%	53%	29%	10%
Gainsharing	6%	2%	9%	1%
ESOP	8%	9%	8%	1%
Pay-for-Knowledge/Skill	17%	25%	10%	6%

Sample: Michigan Manufacturing; 70 union and 61 nonunion establishments; average size of establishment is 170 hourly employees. Cooke (1988).

- There appears to have been a very recent up-shot in cooperative efforts to solve substance abuse problems, with approximately 1 out of 5 unionized establishments (small and large) having established jointly administered programs. It also appears that interest in substance abuse programs is considerably more widespread in unionized than in nonunion establishments.

- Jointly administered financial incentives are becoming more widespread. About 20 percent of unionized medium to large establishments have jointly devised and administered profit sharing, gain sharing, and ESOP plans. For the most part, these joint financial incentive plans appear to be tied to employee involvement activities. In smaller manufacturing firms, profit sharing plans appear to be substantially more common in nonunion than in unionized firms.

B. Perceived Costs and Benefits of Joint Programs

There exists a rich literature about the potential costs and benefits of collaboration. This literature, however, is largely testimonial, based on the reported experiences of managers and union leaders involved in a wide range of joint activities. There is, in addition, a fair number of case investigations and some limited survey work to draw upon.

Potential Benefits and Costs to Management: According to the literature there is a wide range of potential benefits to management derived from joint programs. These potential benefits reflect various dimensions of the labor costs component of company competitiveness and, hence, profitability. In general, these potential outcomes effectively (directly or indirectly) reduce the costs of labor in the production process--by making the process more efficient, by increasing output per unit of labor, by reducing the cost of labor per unit of product produced, and by improving quality, customer, and supplier services.

Potential Benefits

- Increased Productivity[1]
- Improved Quality of Product or service[2]
- Improved Customer Service[3]
- Enhanced Supplier Service[4]
- Reduced Waste and Rework[5]
- Reduced Overhead and Materials Handling Costs[6]
- Reduced Absenteeism, Tardiness, and Turnover[7]
- Reduced Grievance and Disciplinary Action[8]
- Faster Resolution of Problems
- Stronger Identity and Commitment to Company[9]
- Improved Communication (leading to better decision-making and improved labor relations climate)[10]
- Increased Organizational Flexibility and Adaptability[11]
- Improved Relationships Between Supervisors and Employees[12]

Potential Costs

- Added Reorientation and Training Costs for Managers, Employees and Union Leaders[13]
- Perceived Loss of Authority or Status[14]
- Displacement or Loss of Jobs for Middle-Management and Supervisors[15]
- Wasted Time in Meetings[16]

Potential Benefits and Costs to Workers: Unless joint programs offer direct financial rewards, potential benefits to employees are largely intrinsic in nature.

Potential Benefits

- Increased Intrinsic Rewards from the Participation or Involvement Process[17]
- Greater Say in How Work Gets Done[18]
- Improved Working Conditions[19]
- Enhanced Skills/Education
- Heightened Dignity and Self-Esteem[20]
- Improved Supervisor-Worker Relationships[21]
- Enhanced Financial Rewards from Incentive Arrangements[22]
- Reduced Grievances and Quicker Resolution of Problems[23]

Potential Costs

- Working Harder (not necessarily working smarter)[24]
- Eliminating Jobs as a Result of Higher Performance[25]
- Unwanted Peer Pressure to be Involved or Not Involved
- Unwanted Responsibility and Accountability

Potential Benefits and Costs to Unions: In weighing the potential benefits and costs of joint programs, union leaders estimate the value of joint programs in satisfying the needs and promoting the interests of (a) their constituencies, (b) the union as an institution, and (c) themselves as leaders. The potential benefits and costs to workers described above, therefore, are weighed by union leaders. The potential benefits and costs outlined below, on the other hand, are pertinent to the union as a viable institution and to the leaders whom, we can assume, prefer to benefit rather than be hurt politically from joint activities.

Potential Benefits

- Recognition from Members and Non-Members for Improvements[26]
- Greater Input into Management Decisions (including greater access to company information and pre-notification of organizational changes)[27]
- Reduced Day-to-Day Contract Administration Problems[28]
- Greater Membership Input into Union Policies and Activities[29]
- Improved Communication (leading to more harmonious interpersonal relations and trust)[30]

Potential Costs

- Perceived Cooptation by Management[31]
- Heighten Political Conflict over Leadership Role[32]
- Loss of Union Influence and Membership Commitment[33]
- Increased Uncertainty of Re-election[34]

Several general comments about the above costs and benefits are warranted. First, costs and benefits can be either extrinsic or intrinsic in nature. Although each party is expected to weigh both extrinsic and intrinsic outcomes, it should be underscored that the parties are typically weighing apples and oranges. Management, for instance, may be able to weigh (a) the perceived reduction in production costs attributable to increased productivity, improved product quality, and reduction in scrappage against (b) the incurred education and training costs for workers and supervisors (in, say, statistical control techniques, problem-solving, and team work methods). But how does management then compare those extrinsic costs and benefits to the intrinsic costs and benefits associated with, say, perceived loss of status for middle managers and supervisors, or improved communications between and among white collar and blue collar workers? The key point to be made here is that the literature addresses both extrinsic and intrinsic costs and benefits of collaboration, but it is silent in regard to how the parties go about weighing potential intrinsic costs and benefits. In part this is a measurement problem. How does one measure, for example, the benefits of improved communication? In addition, this is a valuation problem. How does one place a cost-benefit value on improved communication which can then be compared to other intrinsic costs and benefits and, moreover, to extrinsic costs and benefits?

Second, a distinction can be made between, what may be called for present purposes, primary and secondary outcome variables. Secondary outcome variables may have value in and of themselves, but they also lead to more tangible primary outcomes. An example may best illustrate this distinction. Improved communication or harmony between managers and employees (secondary outcomes) may be valued outcomes in and of themselves, but they may also lead to other outcomes such as fewer grievances, enhanced job security, or increased productivity (primary outcomes). The literature on joint programs is again silent on how the perceived costs and benefits of primary outcomes are weighed or stack up against secondary outcomes. In most cases one can imagine that primary outcomes get closer to the "bottom-line" thinking of the parties and, hence, play a more important role in the decision to embark upon and/or maintain cooperative efforts. However, we have much to uncover with respect to what outcomes are primary or secondary in nature, how this distinction may differ between management, workers, and union leaders, and how much weight is given to each type of outcome as the parties go about deciding the fate of collaboration.

Third, some potential outcome variables reflect costs or benefits specific to a given party (e.g., increased employee commitment to the union primarily benefits the union leadership). Other outcome variables reflect costs or benefits to more than one party (e.g., a reduced grievance load saves both management and the union leadership lost time and resources in resolving grievances). Going one step further, what may be viewed as a benefit to one party can alternatively be perceived as a cost for another party. For instance, more rank-and-file autonomy may be viewed as a benefit by work units, but not by supervisors. Finally, the potential magnitude of any cost or benefit is bound to differ across organizations as circumstances differ. Take for illustration, an organization with a very low grievance rate. It has less to gain from reducing grievances through joint program activities than an organization with a very high grievance rate.

In summary, the salient variables identified in the existing literature that appear to be weighed by the parties (a) include both extrinsic and intrinsic costs and benefits, which make comparisons of importance very difficult (b) represent what may be called primary and secondary outcomes, which may differ across parties and, again, make comparisons of importance very difficult and (c) may reflect costs and benefits specific to one party or shared by other parties, or may reflect costs to one party but benefits to another. Finally, the reader should bear in mind that the potential magnitude of any cost or benefit is bound to differ across employers, work forces, and union leaders.

C. Relative Power Options

Toward maximizing their own utility without collaboration, employers attempt to bolster their relative power, and, when possible increase total utility. Within our theoretical framework, these efforts are concentrated in altering organizational features (via the relative power function) and altering the human and technical capacity of the firm (via the total power function). From the vantage point of unions, pursuit of increases or maintenance of their own utility without collaboration, rests solely with reshaping organizational features (via the relative power function).

From a more practical plane of analysis, we need to examine the salient relative power options. Both the popular and more academic literature identify several key management options: concession bargaining, subcontracting out bargaining unit work, curtailing operations and closing plants, substituting computer-based automation for labor, and deunionizing. Except for improving organizing activities, union options reflect, for the most part, defensive strategies to the above management options.

Other than in the broadest of terms, the literature has little to say about the estimated costs and benefits of the various relative power options. Assuming, however, that top management is driven to maximize profits for the company as a whole and that middle and lower management has been directed to minimize production and service costs, it follows that management decisions are viewed by managers as providing the greatest net benefit to the company. With regard to reducing labor costs, it is evident that except for concession bargaining, any option selected is not based strictly on reducing labor costs, albeit the reduction of labor costs may be an important if not a primary factor in selecting options.

In examining the perceived costs and benefits of relative power options, several dimensions of the subject are worth underscoring. First, most key options appear to be more aggressively pursued under increasingly competitive, if not adverse, economic circumstances. In theoretical terms, total organizational utility has diminished or is expected to diminish, short of some organizational adjustments. Second, although management may be able to estimate the direct net benefit from a selected option (e.g., the projected net savings in materials handling, inventory, labor costs, etc., from subcontracting), the indirect potential costs of lower employee morale, union-management hostility, and heightened insecurity are not readily ascertainable. One might even surmise that in an existing adversarial union-management relationship, indirect costs associated with relative power options may have been given little if any consideration. Still, these are costs, which later may become apparent in higher grievance rates, absenteeism and tardiness, and in reduced productivity or product quality. Finally, any net gains or losses from any option differ across employers and unions, and are determined in part by certain controlling or intervening variables (e.g., market conditions).

D. Key Employment Issues Addressed by Cooperative Efforts

In addition to addressing the potential costs and benefits, much of the above referenced literature also reports the key purpose or foci of cooperative efforts. The only cross-sectional survey data I am aware of that asks the parties to report the primary purpose and foci of cooperative activities is Cooke (1989). The responses from 125 large unionized manufacturing plants engaged in joint activities are reported in Table 3.

Using an open-ended format, respondents were asked to describe the key problems that led to and are addressed by their program. The key purposes identified in this open-ended question were then categorized, and up to three purposes were coded for each respondent. Reported in Table 3 are the coded responses. Where responses were vague (e.g., "global competition", "new technology", "changing values of workers", "improved customer services", etc.), the purposes were coded as "Other." Among those facilities identifying team-based efforts as their most important programs, the most widely cited purposes were associated with improving quality of product (49 percent) and productivity (33 percent). Eleven percent or fewer of the respondents with team-based programs identified any other specific key purposes. Among those facilities identifying committee-based efforts as their most important programs, the most widely cited purposes were improving productivity (37 percent), labor-management relations (29 percent) and product quality (20 percent). Fewer than 10 percent of the respondents with committee-based efforts identified any other specific key purpose.

In summary, the primary purposes of these joint efforts are to enhance organizational performance and improve various dimensions of the labor-management relationship and climate. These survey responses also appear to mirror well the primary problems and objectives reported in the testimonial and case literature. Within this literature, for instance, in his investigation of 33 firms engaged in cooperative efforts, Schuster (1984) reports that 79 percent placed priority on improving productivity and 48 percent placed priority on improving labor-management relations; whereas fewer than 10 percent of the firms placed priority on improving communications, working conditions (QWL), or job security. The one major inconsistency between Schuster's report and Table 3 is that in Schuster's sample only 6 percent of firms placed priority on improving product quality.

E. Factors Influencing Perceived Costs and Benefits

Based on the testimony of parties embarking on cooperative efforts to solve employment problems, it is the unusual unionized company that engages in cooperative efforts without clear evidence or signals that the market place is demanding substantial adjustment in the way business is conducted. Indeed, it appears that only if the company experiences

TABLE 3

TEAM-VERSUS COMMITTEE-BASED PROGRAMS: KEY PROBLEMS THAT LED TO AND ARE ADDRESSED BY JOINT PROGRAMS*

Key Problems	Team-Based (N=90) %	Committee-Based (N=35) %
Quality of Product	49	20
Productivity	33	37
Cost Related	11	3
Labor-Management Relations	9	29
Absenteeism	8	6
Communications	7	9
Quality of Work Life	6	3
Job Security	6	6
Other	3	14

---

*Excludes joint programs in health and safety, employee assistance programs, and training activities.

or perceives long-run reduced profitability and the unionized workforce experiences or perceives long-run losses in employment and/or compensation, will the parties begin to explore the potential gains from cooperative activities. Perceptions of long-run market adversity, however, only triggers parties to rethink labor-management relations. Companies may opt for more aggressive relative power strategies, wherein the overriding objective is to become less unionized, if not ultimately a nonunion company. This company strategy of union-avoidance has been richly described in recent case study literature (e.g., see Kochan, McKersie, and Chalykoff, 1986, pp. 488-490; and Kochan, Katz, and McKersie, 1986, pp. 56-62). Given necessary market threats that trigger the rethinking of labor-management strategies, the question then becomes: What factors appear to the parties to lower or raise the costs and benefits of pursuing aggressive union-avoidance strategies vis-a-vis pursuing collaborative strategies?

The only existing empirical investigations of these factors I am aware of are reported by Cooke and Meyer (1989) and Kochan, McKersie, and Chalykoff (1986). Cooke and Meyer develop and test a discrete choice model of grand corporate strategies, wherein executives choose one of three strategies: Union-Avoidance, Collaboration, or a Mixed strategy encompassing both union-avoidance and collaboration. The Mixed strategy is depicted as a less aggressive strategy than either the Union-Avoidance or Collaboration strategies. In the Cooke-Meyer model, the strategy choice is shaped by market conditions and by collective bargaining structure, operational structure, and financial structure. Based on a set of propositions about how these factors influence the perceived costs and benefits of pursuing one of the three grand strategies, the authors estimate a model of strategy choice using a sample of 59 large manufacturing corporations. The statistically significant results can be summarized as follows:

- The more severe becomes market conditions (depicted by rising import penetration and declining industry employment), the more likely companies choose either the more aggressive Union-Avoidance or Collaboration strategies over the Mixed strategy. On net, the choice is most likely to be the Union-Avoidance strategy.

- The greater the union strength (depicted by percent of company facilities unionized), the more likely companies choose the Collaboration strategy over both the Union-Avoidance and Mixed strategies.

- The lower the labor intensity of production (measured by labor cost/total value ratio and by the average value added per employee) and the smaller the average plant investment (proxied by plant sales), the more likely the Union-Avoidance or Collaboration strategy is chosen over a Mixed strategy; and the more likely the Union-Avoidance strategy is chosen over the Collaboration strategy.

- The greater the number of plants, the more likely companies choose the Mixed strategy, with a larger proportion moving away from choosing the Collaboration strategy than moving away from choosing the Union-Avoidance strategy.

- The higher the cost-to-sales ratio, the more likely companies choose the Collaboration strategy. As the cost-to-sales ratio rises, companies move away from choosing the Mixed strategy but not away from choosing the Union-Avoidance strategy.

In summary, the Cooke-Meyer investigation lends strong support to the general notion that company executives act in a manner consistent with a model of reacting to perceived costs and benefits of cooperative efforts to solve employment problems. The results also indicate that the decision to cooperate on solving employment problems is based on far more than the extent to which a company is unionized, albeit percent unionized is an important determinant.

In their analysis of the 1983 Conference Board survey of large companies, Kochan, McKersie, and Chalykoff (1986) briefly report on a model of the determinants of the extent of "work place innovations" (see their Table 2, page 493). Although not described in detail in their report, the following factors are statistically significant in their regression estimation:

- When corporate executives have emphasized a union-avoidance strategy, the extent of work place innovations in unionized facilities is lower.
- The more the union(s) participates in work place innovations, the more extensive are these innovations.
- The greater the influence of line executives vis-a-vis industrial relations executives, the more extensive are work place innovations in unionized establishments. (Presumably, line executives are not as frozen in traditional labor relations practices as are industrial relations executives).
- Larger companies engage in more extensive work place innovations.

Just as interesting as the statistically significant estimates, are two insignificant estimates. First, Kochan et al., do not find a statistically significant relationship between "percentage of firm organized" and extent of work place innovations. Second, executive perceptions of "competitive pressures on the firm (foreign and domestic)" are not significantly related to extent of work place innovations. Generally speaking, these latter results are at odds with Cooke and Meyer's results, and as discussed by Kochan et al., (page 494) apparently at odds with their own expectations.

F. Area Labor-Management Committees

In about 110 communities nation-wide, community leaders have established area wide labor-management committees (ALMCS). ALMCs appear to have a fairly general underlying purpose: reduce community-wide adversarial relations between unions and businesses in an effort to improve the overall economic well-being of a community. In large part, the focus of most ALMCs is to keep businesses from failing and attracting new businesses to the community. There are several case reports that suggest these ALMCs can have a substantial impact on the overall economic well being of communities, with the Jamestown experience being widely cited (see Siegal and Weinberg, 1982; Whyte et al., 1983; Cutcher-Gershenfeld, 1984).

ALMCs sometimes engage directly in assisting local businesses and unions in their plant specific cooperative efforts to solve employment problems. Cooke's (1989,c) 1986 survey of plant managers and local union leaders asked respondents to indicate the extent to which their plant worked with ALMCs "in designing and/or implementing cooperative programs." Of the 140 large unionized establishments that had engaged in cooperative activities, 15 percent reported having received "some" assistance from ALMCs, and only 3 percent reported having received "very much" assistance. This latter figure suggests that ALMCs have had little overall nation-wide influence on establishment-level cooperative efforts. However, until more detailed data collection and empirical analysis of ALMCs is forthcoming, any assessment of ALMCs is surely premature.

IV. Intensity and Diffusion of Cooperative Efforts

A. Intensity of Cooperative Efforts

The intensity of cooperative efforts can be viewed as a function of the time, energy, commitment, and quality of input applied to joint activities. Intensity is in part shaped by program structure and in part conditioned by other factors. For example, programs that involve a larger proportion of employees, supervisors, managers and union officers, that schedule meetings more frequently, and provide greater and higher quality training are bound to be more intensive efforts than they would otherwise. Other factors that affect trust, commitment, or enthusiasm for cooperative activities, however, also condition the employees' willingness to volunteer, attend scheduled joint meetings, and give serious attention to identifying and resolving problems. See, for example, Hammer and Stern's (1986) chronology of events that appear to have affected the intensity of cooperative efforts by problem-solving work groups at Rath Packing Company. As will be examined later, the effect of cooperative efforts on solving problems is expected to be determined in large part by the intensity of the cooperative effort. First, however, the purpose of this subsection is to report on various objective parameters that provide a picture of the variation in the intensity of cooperative efforts. More subjective criteria that would help to better describe intensity (e.g., the quality of team-based training, and the quality of the input into problem identification and resolution), however, have not been addressed in the literature and are, hence, not addressable in this synthesis.

The objective criteria examined are: the frequency of team and committee meetings, the extent of formal training and reorientation sessions, the number of team or committee members, and the percent of the bargaining units engaged in cooperative activities. Although the descriptive case literature often describes the above parameters (see e.g., Verma and McKersie, 1987, and Lee, 1987) as they apply to specific cooperative efforts, here I will summarize the limited but more systematic survey data by Cooke (1988) and Cooke (1989,c).

Generally consistent with the case literature reports, teams meet on average, once every two weeks, with the great majority meeting more often than once every month, albeit some meet far less frequently. Committees generally meet half as often as teams; on average once a month but sometimes weekly or as infrequently as once every three months.

With respect to team based efforts in small to medium sized establishments, team members receive any where from no formal training to as many as 40 hours of training. On average, team members receive about 12 hours of training. Where training is provided, on average 50 percent of the rank-and-file have received training pertinent to team-based activities. The percent trained, however, ranges from 3 percent to 100 percent.

With respect to the proportion of blue-collar employees who have actively participated in team-based efforts (where, again, such activities exist), it appears that in large unionized facilities only about 20 percent have been involved. In smaller union and nonunion establishments, the comparable figure is about 40 percent.

The average committee size of committee-based efforts is approximately 10 members. Generally, the make-up of these committees is equally divided between management and union representatives. However, union leader representation ranges from a low of 20 percent to a high of 80 percent. Lastly, it is worth noting that about 40 percent of these committees establish short-lived ad hoc teams to investigate and attempt to resolve specific problems identified by the committees.

In summary, the literature indicates that there is considerable variation in the intensity of cooperative efforts. First, this variation in intensity is bound to be most noticeable between committee-based and team-based activities, wherein the team-based cooperative activities generally include a far greater proportion of employees and meet substantially more often. Second, we also must recognize the variation within team-based and committee-based programs as depicted by frequency of meetings, hours of training, percent of employees receiving training, the proportion of the work force actively involved, and the make-up of the committee. Lastly, although hardly addressed in the literature, it seems reasonable to conclude that there is much variation in (a) the type and quality of training and reorientation and (b) the informal problem-solving processes across cooperative efforts that make the identification and resolution of employment problems more or less intensive.

B. Factors Influencing Intensity and the Diffusion of Cooperative Efforts

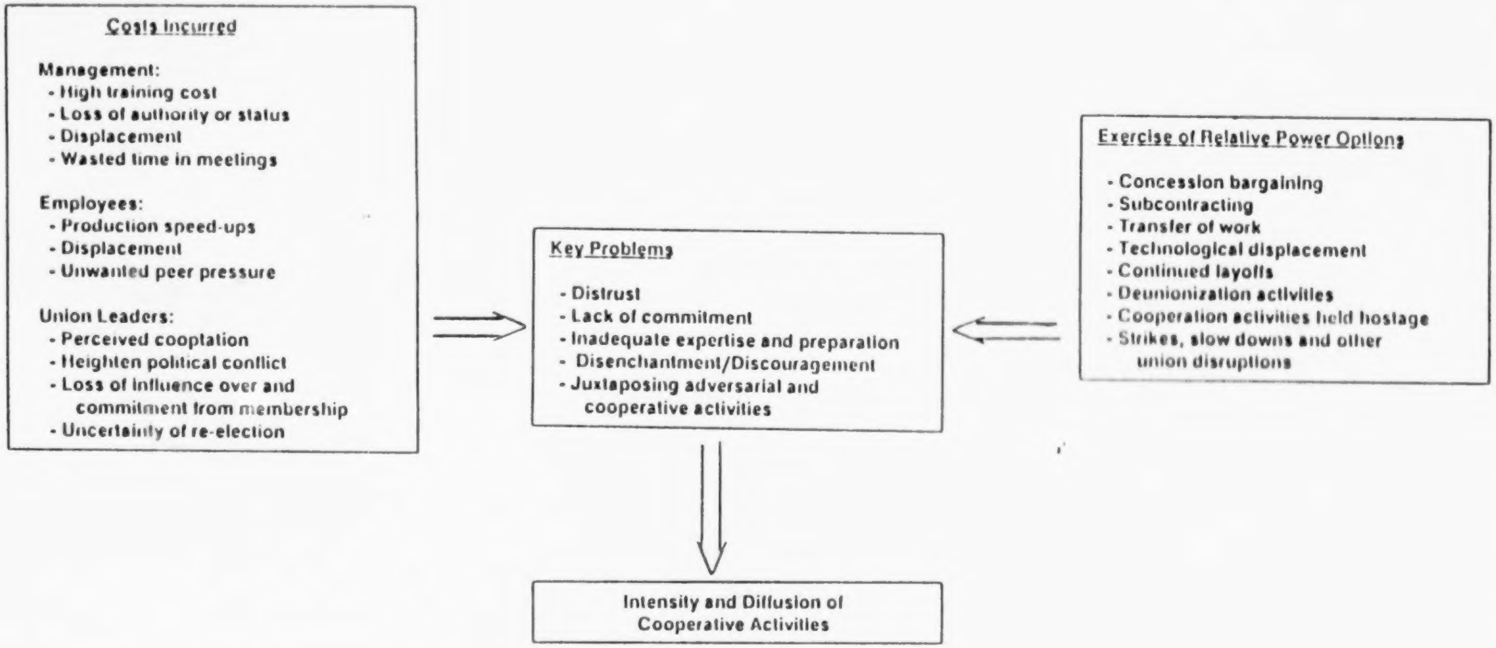
As diagrammed in Figure 2, the literature addressing the factors that decrease or increase the intensity and diffusion of cooperative efforts are (a) the realization of the potential costs discussed earlier and (b) the exercise of relative power options. As these factors have been reviewed, we turn here to examining the key problems and barriers and discussing how these problems influence the level of intensity and diffusion of cooperative efforts.

Although the existing literature addressing these problems is rich, it is largely testimonial and descriptive. There appear to be no scientific investigations about the causes of these problems or their influence on the intensity and diffusion of cooperative activities. To avoid a lengthy recitation of the many examples of these problems, I will reference the applicable literature and lay out in table form the perceived extent of these problems as reported by Cooke (1989) in his survey of both plant managers and union leaders. The only other pertinent survey responses reported in the literature are found in Kochan, Katz and Mower (1984). I will integrate their findings in my discussion.

Reported in Table 4 are the responses of plant managers (N=110) and local union leaders (N=60) to questions about the extent of problems encountered. Respondents were asked: To what extent have the following problems affected the successful implementation and maintenance of your most important joint program? Respondents were given a choice of four answers: not a problem, somewhat a problem, very much a problem,

FIGURE 2

KEY PROBLEMS AND BARRIERS ARISING FROM COOPERATIVE ACTIVITIES
AND THE FACTORS THAT DETERMINE THESE PROBLEMS


Costs Incurred
Management:
- High training cost
- Loss of authority or status
- Displacement
- Wasted time in meetings
Employees:
- Production speed-ups
- Displacement
- Unwanted peer pressure
Union Leaders:
- Perceived cooptation
- Heighten political conflict
- Loss of influence over and commitment from membership
- Uncertainty of re-election
Key Problems
- Distrust
- Lack of commitment
- Inadequate expertise and preparation
- Disenchantment/Discouragement
- Juxtaposing adversarial and cooperative activities
Exercise of Relative Power Options
- Concession bargaining
- Subcontracting
- Transfer of work
- Technological displacement
- Continued layoffs
- Deunionization activities
- Cooperation activities held hostage
- Strikes, slow downs and other union disruptions
Intensity and Diffusion of Cooperative Activities

important factor in termination of program. For sake of simplicity, those few responses that the given problem was an "important factor in termination of program" will be included in the table under "very much" a problem.

1. Distrust:

Because distrust between employers and unions often has deep roots, the establishment of joint programs typically only signals that the parties are willing to experiment with joint programs. Existing literature and testimony make it clear that joint efforts reflect fairly uneasy partnerships in joint problem-solving. The widely shared conclusion of the literature and testimony is that sufficient trust must be developed over time, else joint efforts will wane and ultimately be undermined by distrust. (Schuster, 1984, p. 192; Rosow, 1986; Williams and Watts, 1986).

The first four problems identified in Table 4 address issues of trust. First, respondents were asked to what extent is the "lack of sufficient trust between parties" a problem. There appears to be close agreement to the extent of the problem of trust between managers and local union leaders. Only about 15 percent do not find the lack of trust to be a problem, whereas about 50 percent find it to be somewhat a problem, and roughly 35 percent find it to be very much a problem.

Several trust-related questions were asked only in the survey of local union leaders. The first question asked the extent to which "violation of trust by either party" is a problem. About 45 percent find it to be somewhat of a problem and another 25 percent find it to be very much a problem. The second question asked the extent to which "perceived manipulation of program (or bonus formula) by management" was a problem. Here, about 35 percent find perceived manipulation to be somewhat of a problem and 25 percent find it to be very much a problem.

The literature indicates that union leaders often fear that collaboration with management will be perceived by union members as a form of cooptation. That is, union leaders want their members to trust them. To address this dimension of trust, union leaders were asked the extent to which "perceptions by workers that the union leadership has been coopted by management" was a problem. Over 65 percent report that perceptions of cooptation are somewhat of a problem, but only 7 percent find it to be very much of a problem.

2. Commitment:

Sufficient commitment by all parties to cooperative efforts is an essential ingredient to any long-run success. (Schuster, 1984, pp. 199-200; Cutcher-Gershenfeld, 1988; Wintergreen, 1986). The stronger the commitment, the more intensified and diffused these cooperative activities are likely to become. Furthermore, trust and commitment appear to be inextricably intertwined. Without sufficient trust, commitment is hard to attain; and without sufficient commitment, high levels of trust are unobtainable.

Table 4 reports management and union leader responses to questions that asked the extent to which "lack of commitment by upper management," "lack of broad commitment among plant managers," and "lack of broad commitment by union leaders" were problems.

TABLE 4

EXTENT OF KEY PROBLEMS ENCOUNTERED IN COOPERATIVE ACTIVITIES

Problem	Not a Problem		Somewhat a Problem		Very Much a Problem	
	Mgmt	Union	Mgmt	Union	Mgmt	Union
Lack of Trust	17%	12%	46%	52%	37%	36%
Trust Violated	---	29%	---	40%	---	26%
Management Manipulation	---	44%	---	35%	---	25%
Perceived Cooptation	---	26%	---	67%	---	7%
Upper Management Commitment	36%	41%	34%	21%	30%	39%
Plant Management Commitment	38%	25%	45%	39%	17%	37%
Union Leader Commitment	22%	51%	51%	36%	27%	14%
Lack of Experience/Expertise	41%	31%	50%	44%	9%	25%
Plant Management Preparation	34%	21%	41%	33%	25%	46%
Workforce Training/ Orientation	37%	25%	44%	49%	19%	26%
Insufficient Job Security	---	22%	---	38%	---	40%
Expected Gains Not Gotten	---	21%	---	50%	---	29%
Worker Skepticism/Lack of Interest	---	15%	---	53%	---	32%
Balancing Negotiations & Cooperation	37%	39%	42%	42%	21%	19%
Balancing Contract Administration & Cooperation	33%	41%	48%	47%	19%	12%

First, a majority of both plant managers and local union leaders find that the lack of upper management commitment to joint programs is a problem. Indeed, just under one-third of managers and just over one-third of union leaders perceive the lack of upper management commitment to be very much a problem. With regard to plant level management commitment, there is substantial disparity between management perceptions and union leader perceptions. In particular, note that only 17 percent of managers perceive that the lack of broad commitment among plant managers is very much a problem. In sharp contrast, 37 percent of union leaders perceive plant management commitment to be very problematic.

These perceptions of commitment are reversed when the parties are asked about the lack of broad union leader commitment. Nearly 80 percent of managers report union leader commitment to joint programs as a problem, whereas only 50 percent of union leaders report union leader commitment as a problem. Although, overall, local union leader commitment seems to be less of a serious problem than broad plant management commitment, 27 percent of managers find union leader commitment to be very much of a problem, and 14 percent of local union leaders report union commitment to be very much a problem.

In their survey of approximately 140 union representatives, Kochan, Katz, and Mower (1984), ask the extent to which "loss of union support" and "loss of plant management support" limit the expansion of the participation process. They report (see their Table 5-3, p. 147) that 43 percent of the respondents do not perceive loss of plant management support as a problem. About 37 percent perceive it to be somewhat of a problem and 20 percent perceive it to be "quite a bit" or "a very great deal" of a problem. With respect to loss of union support, roughly 55 percent of the respondents report it to not be a problem, 37 percent report it to be somewhat of a problem, and about 20 percent report it to be a much more serious problem.

Although the questions asked by Kochan, Katz, and Mower differ from those asked by Cooke, there appears to be some general consensus between samples regarding "loss of union support" and "union leader commitment." In contrast, however, a much larger percentage of union respondents in Cooke's sample perceive the lack of plant management commitment as a substantial problem than do union respondents in Kochan, Katz, and Mower's sample.

3. Inadequate Expertise and Preparation:

As discussed, the intensity of orientation and training is wide ranging; ranging from what appears to be only a few hours of preparation to many hours of very extensive team-work training and leadership preparation. It is often reported that the parties find themselves ill-prepared in shifting to new management styles, employee involvement, and harmonious union-management relations. In short, the lack of experience and expertise can be a barrier for many parties, and inadequate training of employees in problem identification and resolution appears to be a significant roadblock for teams and committees to get beyond the more obvious problems and resolutions. (Rosow, 1986; Schuster, 1984, pp. 116, 200).

To address this issue, both plant managers and local union leaders were asked several questions about the extent to which inadequate expertise and preparation are problems in the successful implementation and maintenance of joint programs. Reported in Table 4 are the responses to these questions. The first set of responses pertain to "lack of experience or expertise in devising and implementing joint programs." As reported, the majority of both managers and union leaders report that the lack of experience or expertise has presented at least modest problems. Union leaders appear to find that lack of experience or expertise is more often a serious problem than do managers, with 25 percent of union leaders but only 9 percent of managers reporting this to be very much a problem.

The second set of responses pertain to "lack of adequate preparation of plant management for change." Again, the majority of both managers and union leaders find this to be at least a modest problem. However, a far greater proportion of union leaders see lack of plant management preparation as very much a problem than do plant managers, 46 percent and 25 percent, respectively.

The final set of responses pertains to "lack of adequate orientation and training for bargaining unit employees for change." Once again, a majority of both union leaders and managers see this to be a problem. At the extreme, approximately one-fifth of managers and one-fourth of unions leaders perceive the lack of adequate orientation and training for employees to be very much a problem.

4. **Workforce Disenchantment and Discouragement:**

Over time, enthusiasm for innovative joint activities is known to wane and under severe market conditions, the intensity of effort appears to decline. (Camens, 1986; Cutcher-Gershenfeld, 1988; Williams and Watts, 1986). In the survey to local unions, leaders were asked several questions about the extent to which demoralizing outcomes were problematic for the successful maintenance of joint activities. In the first question, union leaders were asked the extent to which "expected gains from programs not gotten" were a problem. As reported in Table 4, approximately 80 percent respond that not attaining expected gains was a problem. Nearly 30 percent report this factor to be very much a problem.

Secondly, nearly 80 percent of the respondents find that "insufficient job security" is problematic. Indeed 40 percent report that employment insecurity to be very much a problem. Lastly, it appears that "skepticism or lack of interest" by employees is perceived by local union leaders as highly problematic. As reported, 85 percent perceive it be a problem, with nearly one-third reporting it to be very much a problem.

Kochan, Katz, and Mower's (1984) survey of union representatives lends further support to the findings reported in Table 4. They report that over 60 percent of union respondents perceive that "worker disenchantment" is somewhat of a problem, and nearly 35 percent perceive disenchantment as "quite a bit" or "a very great deal" of a problem. Only 4 percent respond that disenchantment among workers is not a problem. In a second related question, Kochan, Katz, and Mower report that 27 percent of the union respondents find "layoffs or other employment cutbacks" to be somewhat of a problem, whereas 53 percent find it to be a more serious problem limiting the expansion of cooperative activities. These data parallel fairly closely similar responses reported in Table 4.

5. Juxtaposing Cooperation and Collective Bargaining:

A fundamental thesis underlying our analysis of cooperative activities is that the successful implementation, maintenance, and expansion of joint activities requires that the parties find ways to juxtapose collaboration and more traditional collective bargaining. The multitude of problems that arise in attempting to mix and balance these two distinct processes has very recently been described in the literature. (Bluestone, 1986; Wever, 1988; Hammer and Stern, 1986; Smaby et al., 1988). Reported in Table 4 are responses to two questions which asked the parties the extent to which they have had difficulty "juxtaposing cooperation" or "balancing joint activities" with contract negotiations and contract administration. As reported, the majority of managers and union leaders find that juxtaposing joint activities with contract negotiations and administration presents problems. About 20 percent of all respondents report juxtaposing collaboration and contract negotiations as very much a problem. Likewise, about 20 percent of managers find juxtaposing collaboration and day-to-day contract administration very much a problem; but only 12 percent of union leaders report this to be very much a problem.

V. Outcomes of Cooperative Efforts to Solve Employment Problems

Discussed in Section III,B were the potential costs and benefits (i.e., outcomes) of cooperative efforts. The largely case literature cited provides observation and testimony addressing either actual or perceived outcomes. This case and testimonial literature, however, is based only on the observation of the author(s) as to what appears to have occurred. However, cooperative efforts do not occur in isolation of other key factors. It would be naive to think that one can infer which factors determine selected outcomes. Except for the studies reviewed next, the literature is generally void of scientific investigations testing the effect of cooperative efforts on the various outcomes. This is not to say that case reports are not valuable in understanding cooperative efforts to solve employment problems. Indeed they provide a rich set of potential general propositions and specific hypotheses for attempting to develop meaningful theories and testable models. Moreover, as Mark Twain once said, "there is nothing harder to put up with than a good example." This poignant statement may be especially pertinent to a scientific community. Nevertheless, nearly all the cases fall seriously short of fundamental canons of scientific inquiry, as that inquiry applies to uncovering cause-effect relationships; an understanding that is the heart of serious scientific inquiry. Furthermore, parties involved in cooperative efforts are desperately seeking to understand the salient cause-effect relations that impede and improve the success of their cooperative efforts. This interest has become less of a question about whether cooperative efforts pay off and more of a question of why some are clearly successful while others are not. Hence, we turn to a synthesis and critique of the more scientifically based investigations.

The scientifically grounded studies of interest fall within two broad methodologies: those that are largely intervention or quasi-experimental in design and those employing a probabilistic statistical methodology. Among the former is Schuster's interrupted time-series studies. Schuster (1983) reports on his study of nine unionized manufacturing sites, in which he examined productivity and employment trends prior to formal implementation of gainsharing and joint labor-management committees. In 6 of 8 establishments, Schuster finds statistically significant increases in productivity and in 8 of 9 establishments no statistically significant changes in employment.

The handful of published and recently completed but yet unpublished reports (that I have knowledge of) are presented in abbreviated form in Table 5. In all investigations the authors engaged in some form of original data collection, with an eye to statistical modeling and estimation of the effect of selected independent (supposedly exogenous) variables on selected outcomes. The observations were either plant-level or company-wide observations. In the three articles by Katz and his co-authors, the data are from UAW represented plants in one domestic auto company. Voos's sample is drawn from Wisconsin companies, and the remaining studies use nation-wide samples.

The dependent variables were performance related or labor-management relations outcomes. These outcomes were either direct measures of performance or perceived changes in selected outcomes. With

TABLE 5

SUMMARY OF NON-EXPERIMENTAL PROBABILISTIC STUDIES

Author(s)/ Publication	Sample	Dependent Variable(s)	Independent Variables	Key Statistical Findings
		A. Analysis of Plant Level Outcomes		
1. Katz, Kochan, Gobeille Industrial & Labor Relations Review, 1983	18 GM plants pooled over 1970–1979	• Product quality index • Direct labor-efficiency index	• QWL ratings • overtime • total hours • absenteeism • grievance-rate	• more extensive QWL activities improve quality but not efficiency
2. Katz, Kochan, Weber Acad. of Man. Journal, 1985	1 auto company, 25 plants pooled over 1978–1980	• Product quality index • Direct labor-efficiency index	• % QWL involvement • suggestion program participation • absenteeism • grievance rate • discipline rate • size • management attitudes	• greater QWL involvement has no effect on efficiency and a negative effect on quality • greater participation in suggestion program has positive effect on quality and no effect on efficiency
3. Katz, Kochan, Keefe Brookings Papers on Economic Activity, 1987	1 auto company, 53 plants, pooling 1979 and 1986 data	• No. of supervisors per production worker • Labor hours in production • Product quality index	• composite index of team-related activity • composite indices of worker/union participation in group decisions and in technology decisions • composite index of managerial discretion • absenteeism • grievance rate • relative wages • unemployment rate • controls for type of production and start-up phase	• extent of team related activities increases labor hours, and has no effect on number of supervisors and quality • worker/union participation in group decisions has no effect on any outcome • worker/union participation in technology decisions has inconsistent effects on number of supervisors and quality; and generally positive effects on reducing hours of labor • greater managerial discretion reduces labor hours, number of supervisors; has no effect on quality
4. Voos, Industrial & Labor Relations Review, 1987	343 unionized companies in Wisconsin, 1984	• Managerial perceptions of program effect on: • quality • productivity • labor costs • profits	• gain sharing/profit sharing • ESOP • employee involvement • general and specific joint plant committees • 28 organizational controls (results not reported)	• all programs perceived as having positive impact on nearly all performance outcomes. Gain sharing/profit sharing and EI programs have greatest effect

TABLE 5 (continued)

SUMMARY OF NON-EXPERIMENTAL PROBABILISTIC STUDIES

Author(s)/ Publication	Sample	Dependent Variable(s)	Independent Variables	Key Statistical Findings
A. Analysis of Plant Level Outcomes				
5. Voos, Journal of Labor Research, in press, 1989	343 unionized companies in Wisconsin, 1984	Managerial perceptions of program effect on: • union-management relations • grievance rates • ability to resolve grievances informally • flexibility • absenteeism • turnover	• same independent variables as Voos (1987) above	• all efforts have positive effect on changes in flexibility, absenteeism, and turnover • only general plant committees have consistent positive effects on union-management relations, grievance rates, and ability to resolve grievances informally • profit sharing + ESOP programs have negative effects on union-management relations
6. Cooke, Industrial Relations (1989)	87 large unionized manufacturing plants with joint programs, nation-wide, 1986	• Managerial perceptions of changes in quality and productivity since joint programs began	• active v. less active team-based joint programs • joint committee-based programs • union leader participation on steering committee • program duration • capital displacement, subcontracting, concession bargaining • % union representation • layoff experience • size, average years experience, and % female as controls	• highly active team-based programs lead to greater improvements; less active teams do not • committee-based programs as effective as active teams • greater % unionized and greater union leader participation lead to greater improvements • program success begins to drop after 4 years • capital displacement improves productivity • subcontracting and continued layoffs impede improvements
7. Cooke, unpublished, 1989	95 large unionized manufacturing plants with joint programs, nation-wide, 1986	• Managerial perceptions of changes in adversarial supervisor-employee relations since joint programs began	• same variables as Cooke above, except no control for % female	• more active teams improve relations, but less active teams and committees do not affect relations • greater union leader participation improves relations, but % unionized has no effect • program effect begins to drop after 3 years • subcontracting reduces success, but concession bargaining and technological displacement have no effect • relations improve more under severe decline and substantial increase in plant employment

TABLE 5 (continued)

SUMMARY OF NON-EXPERIMENTAL PROBABILISTIC STUDIES

Author(s)/ Publication	Sample	Dependent Variable(s)	Independent Variables	Key Statistical Findings
Analysis of Corporate Financial Outcomes				
8. Delaney, Ichniowski, and Lewin, Proceedings of Industrial Relations Research Assoc., 1988	178 business units, nation-wide, 1986	• Return on assets (ROA) in 1986	• any EI programs • high/low authority for EI groups • totally unionized, double breasted, or non-union business unit • interaction terms for EI, authority, and union status • 6 industry-wide controls (education, experience, gender, race, concentration ratio, durable goods)	• EI programs with high or low authority have no effect on ROA • totally union companies with high authority EI programs reduce ROA
9. Meyer and Cooke, unpublished, 1989	56 unionized manufacturing corporations, 1986	• Change in return-on-sales (ROS); 1986-1975 • Change in added value per employee (Δ value); 1986-1975	• percent of unionized plants with joint programs • extent of non-union facilities opened since 1975 • extent of unionized facilities closed since 1975 • change in number of plants and employees since 1975 • decertification of unions • controls for changes in industry import penetration and industry shipments	• companies with > 50% of plants with joint programs increases both ROS and Δ value • more non-union facilities opened increases ROS • more union facilities closed reduces ROS • decertification of unions reduces both ROS and Δ value • greater import penetration reduces ROS, whereas growth in industry shipments increases both ROS and Δ value

respect to the independent variables, there is little direct comparability between studies, except authors employ similar models across their own investigations. With respect to the overall effects of cooperative efforts on performance and labor-management relations, the statistically significant findings are mixed.

Katz et al. generally find no statistically significant support for the inference that cooperative efforts have, on average, positive effects on quality or efficiency. Delaney et al. come to the same conclusion about cooperative efforts as they effect return-on-assets. Voos, on the other hand generally finds that all plant-level cooperative efforts have positive effects on nearly all performance and labor-management relations outcomes. Cooke finds statistical evidence that depending on various factors, joint efforts have greater or lesser effect on quality, productivity, and supervisor-employee relations. In particular, more positive outcomes are realized with teams are more active, there is greater union leader participation, the cooperative effort is in its first 3 - 4 years of activity, when there is no or little employment loss, when management does not engage in subcontracting, when the work force is not highly senior, and in smaller establishments. Finally Meyer and Cooke find statistical support for concluding that extensive joint activity has positive effects on return-on-sales and changes in added-value-per-employee. These financial returns to cooperative efforts are further enhanced when corporations avoid the decertification of local unions and the closing of unionized plants (unless in this latter case, the closing of unionized facilities is coupled with the opening of sites that become unionized).

Clearly there are a number of problems underlying these studies that limits our confidence about generalization of any findings. In all studies the authors face measurement problems, raising a host of questions about measurement validity. However, obtaining the kind of sensitive and highly guarded data invariably preferred by the research community is a dilemma yet resolved. Second, as none of the final data bases reflect a random selection of cooperative efforts (and in turn reflect a random treatment), each potentially suffers from selection bias. Given that there are likely to be important factors that (a) induce parties to engage (or keep them from engaging) in cooperative efforts and (b) determine the intensity of cooperative efforts, this potential selection bias may not be minor.

Third, the most serious limitation, in my judgement, centers around omitted variable biases. Here, except for Cooke and Meyer and Cooke, none of the authors seem to even attempt to build a sufficiently complete model of changes in performance and labor-management relations. Instead, the authors have formulated a few key hypotheses and estimated statistical association without controlling for the many potentially confounding variables. Voos may be an exception as she controls for numerous variables, although no theoretical justification for the variables included is presented. Potential omitted variable bias is especially high in any analysis of cooperative efforts since nearly all efforts appear to be accompanied by one or more of the following: substantial changes in competition and market conditions, the exercise of various relative power options (such as technological displacement, subcontracting and concession bargaining), internal union dissension about cooperative efforts, and significant organizational change within given establishments and in parent organizations.

To date, the scientific empirically based literature has not addressed the cause-effect relations between cooperative efforts and union leader and membership outcomes. Some preliminary responses from local union leaders and activists who have been involved in cooperative efforts at the plant level, however, provide some limited comparable responses among union leaders across manufacturing establishments. For illustration, I have drawn selectively from Kochan, Katz, and Mowers' 1982 survey of union leaders in the auto industry and Cooke's 1986 nation-wide survey of local union leaders. Among the outcomes reported in Table 6, those for which union leaders perceive cooperative efforts are yielding the greatest improvements are:

- job satisfaction
- work conditions/safety and health
- ability of union representatives to resolve member problems/grievances
- information shared by management
- member-committeemen relations

However, it appears that there is also a relatively high likelihood (20 percent) that member-committeemen relations can sour.

Among outcomes for which many union leaders perceive cooperative efforts are having negative effects are:

- job security
- member commitment to and identification with the union

Finally, it is worth noting that although 70 percent of the respondents in Cooke's survey report management has shared greater pertinent information about business conditions, only 24 percent report they have had greater input into business decisions.

Overall it appears that union leaders and members are able under some circumstances to obtain desired outcomes from cooperative efforts, yet many have not; turning potential benefits into perceived costs. Key to our future research agenda is a rigorous examination of the factors that explain these differences.

Summary: Although this and any overly brief summary and critique of the literature examining the effect of cooperative efforts to solve employment problem is, on one hand, an injustice to the various authors' endeavors to uncover key cause-effect relations, on the other hand it is clear that we have only begun to rigorously address this critical activity. At best we have barely scratched the surface toward understanding the complex cause-effect relations underlying cooperative activities and their outcomes. With this caveat in mind, let me summarize what we have learned from the more scientifically based literature by making the following tentative conclusions.

1. Cooperative efforts, on average, have had modest but important effects on resolving employment problems associated with productivity, quality, and labor-management relations. Some efforts have been enormous successes along these lines, yet others have had little or no effect, and some cooperative efforts have had negative "back fire" effects.

2. A certain level of intensity in cooperative activities is required before positive effects on performance and labor relations are realized. Those efforts that provide sufficient reorientation and training, schedule problem identification and resolution meetings frequently, encompass a sufficiently large proportion of employees, and in which the union leadership is relatively secure and actively involved in cooperative activities have rewarding outcomes. Most cooperative efforts to date have failed to satisfy these key ingredients.

TABLE 6

EFFECT OF JOINT ACTIVITIES ON LOCAL UNION LEADER/MEMBER OUTCOMES

Outcome*	Cooke (1986, N=65)			Kochan, Katz, Mower (1982, N=110)		
	Better	Same	Worse	Better	Same	Worse
1. Job satisfaction (and morale)	41%	51%	8%	72%	13%	15%
2. Work conditions (safety and health)	45%	47%	8%	55%	39%	6%
3. Job security	30%	45%	26%	39%	36%	25%
4. Ability to resolve members problems (grievances)	43%	43%	14%	64%	26%	10%
5. Member commitment to (identification with) union	33%	49%	18%	37%	40%	23%
6. Member-committeemen relations	NA	NA	NA	46%	24%	20%
7. Information shared by management	70%	28%	2%	NA	NA	NA
8. Union input into business decisions	24%	72%	4%	NA	NA	NA

Taken from Kochan, Katz, Mower (1984), Chapter 5, and Cooke (forthcoming), Chapter 4.

*Questions asked are for the most part very similar between the two surveys (with respect to selected outcomes reported here). Outcomes in parentheses depict Kochan et al.'s question to local union officers and activists in the auto industry. Kochan et al.'s survey responses were originally coded as very positive effect, somewhat positive effect, no effect, somewhat negative effect, and very negative effect. Cooke's survey responses were originally coded much higher, modestly higher, about the same, modestly lower and much lower.

3. The exercise of relative power options occur simultaneously with and/or sequentially to cooperative efforts. Where the parties cannot juxtapose (or resolve the inherent dilemmas underlying) their relative power and collaborative power activities, the effect of cooperative efforts is diminished. In particular, subcontracting away bargaining unit work and aggressive anti-union activities within the company (such as closure of unionized facilities and decertifications) severely diminishes the intensity of cooperative efforts and generally worsens overall company performance.

4. In general, the positive effects of cooperative efforts begin to diminish after only a few years.

VI. Policy Implications and Recommendations

A. General Policy Implications

I begin by highlighting general implications for government involvement and/or assistance to the private parties. Subsequently, limited policy recommendations are provided. To identify the key policy implications, I draw on the theoretical framework presented in Section II, and recapitulate pertinent conclusions from each component of the analytical framework.

As discussed in Section III, roughly one-half of the larger unionized manufacturing facilities nation-wide have embarked on cooperative efforts; efforts aimed primarily at improving company performance and labor-management relations. An examination of corporate strategies strongly suggests that the fundamental decision to collaborate (or not) has already been made. Hence, it is doubtful that we will see any substantial increases in the extent of cooperative efforts across larger organizations. One policy implication, therefore, is not to target government policies or assistance toward these larger organizations. If per chance, these corporations decide that aggressive adversarial union-avoidance or deunionization strategies reduce their long-run competitiveness, they have sufficient knowledge and resources to construct and implement collaborative strategies.

Our limited knowledge suggests there is still sufficient room for government assistance (and perhaps demand for assistance) to make a difference in the diffusion of cooperative activities across smaller organizations. Make a difference, that is, in assisting these smaller organizations in their decision to engage in cooperative efforts and, if so decided by the private parties, assist them in the initial implementation of cooperative efforts.

As discussed in Sections IV and V, few cooperative efforts at the establishment level enlists or encompass a majority of employees. On one hand, the apparent slow diffusion of cooperative efforts within facilities can be expected and is probably healthy since the parties are adapting to substantial organizational change. On the other hand, however, serious problems and barriers (e.g., lack of sufficient trust and commitment) are encountered, which can severely limit if not undermine these cooperative efforts. In addition, it appears that efforts of limited intensity have little or no effects on improving performance, labor-management relations, and other sought-after gains. Also bear in mind that historically the few instances of labor-management cooperation have been short-lived (see Jacoby, 1983, and Hammer and Stern, 1986). As emphasized in the theoretical framework presented, herein, I am convinced that the key to the success and longevity of cooperative efforts is finding mechanisms or processes by which the parties can juxtapose relative power activities and cooperative activities. The recent history of Eastern Airlines and its unions dramatically underscores this central theme. I think there is good reason to believe, therefore, that if the current widespread experimentation with cooperative efforts is to be institutionalized (Kochan and Cutcher-Gershenfeld, 1988), the parties must find ways to resolve the inherent problems, and in turn, intensify and expand their cooperative efforts (at least to that point where the net return to cooperative efforts are maximized). The overriding policy implication, consequently, is that any government assistance should be focused on helping private parties make the transition from experimentation to institutionalization of cooperative efforts to solve employment problems.

B. Policy Recommendations

I have limited my policy recommendations to government provision of information, education, and modest support for consultative services. It seems reasonable to conclude that successful cooperative efforts to solve employment problems must be based on a voluntary recognition by the parties that the net benefit derivable from such activities is greater than the net benefit derivable from strictly relative power adversarial relationships. Any kind of government mandate for cooperative activities or forced participation I do not believe are workable in our democratic capitalistic system. Nor can I imagine that Congress would embrace any such notions of government intervention. In addition, I have ruled out any kind of tax policies that would act as incentives for the parties to cooperate. The competitive market place is sufficient incentive. As I have not been asked to comment on existing labor laws, I make one general recommendation pertinent to the limited scope of this report. It is imperative that the true intent of the National Labor Relations Act be vigorously upheld and applied, especially as it applies to the guiding principles of the duty to bargain in good faith, union organizing, and decertification of unions. As global and domestic non-union competition have placed enormous demands and unforgiving pressures on unionized companies to become competitive, many companies have chosen highly aggressive union-avoidance and deunionization strategies. It seems plausible to conclude that a lax interpretation and/or enforcement of pertinent labor law increases the likelihood of union-management conflict and reduces the likelihood that cooperative efforts to solve employment problems will be embraced by American businesses.

The synthesis of the literature points to one overriding conclusion. Our knowledge is severely limited and for the most part of superficial benefit to the parties seeking to maintain and expand cooperative efforts. My first recommendation, therefore, is that the Department of Labor commit resources for in-depth and rigorous scientific investigations. A $500,000 annual allocation of competitive funding to support scientifically rigorous investigations over the next three to four years would yield enormous benefit to the parties. Furthermore, the Bureau of Labor-Management Relations and Cooperative Programs should likewise allocate their limited research monies to rigorous scientific investigations instead of funding additional case reports. It is my opinion (albeit not necessarily that of others) that those case studies have effectively fulfilled their original purpose and currently are not adding sufficiently to our understanding of key underlying cause-effect relations; an understanding critical to the practicing world. These investigations should focus on the full scope of issues addressed herein, involve researchers from a variety of scientific disciplines and fields of study, and should encompass the full range of research methodologies (ranging from experimental, to intervention studies with naturally occurring experiments, and non-experimental probabilistic analyses of survey data).

To insure that projects of the highest scientific standards are funded, single-blind reviews of proposals in the spirit of NSF funding procedures should be established. That is, reviewers of proposals would provide their critical assessment of the scientific merits of proposals and provide constructive comment on proposals recommended for funding. Bureau staff would weigh these assessments against their own assessment of the proposal, the proposed funding levels, and the credentials of investigators.

My second fundamental recommendation calls for a centralized coordination of the dissemination of this body of knowledge. This dissemination would be provided through three outlets.

1. The Bureau (BLMR) would provide edited reports, highlighting the key findings and implications in a practical and meaningful way and where applicable, identifying the parties reflected in the research. These reports would be substituted for the current BLMR case descriptions.

2. A nation-wide consortium--like program offering 2-3 day seminars to the public would be established. Host colleges, universities, and other not-for-profit organizations would disseminate the new body of knowledge through workshop settings. These workshops

would be financially self-supporting. The Bureau would provide leadership and assistance in coordinating and publicizing these offerings.

3. More effective use of ALMCs and the FMCS should be fashioned. The personnel in these existing networks would share and disseminate the new body of knowledge as they provide consultative services.

In closing, obviously only an outline of recommendations has been prescribed. The details of these recommendations can be devised later. In any case, however, the synthesis and critique of our current working knowledge hopefully provides impetus to go to the next and more critical stage of understanding the complexity of cooperative efforts to solve employment problems.

NOTES

[1] See Voos (1986); Schuster (1984, ch. 6); Cohen-Rosenthal and Burton (1987, pp. 32-33); Rosenberg and Rosenstein (1986); Continio (1986); Boyle (1986); Douty (1975); Pearlstein (1988); Cooke (1989a).

[2] See Camens (1986); Voos (1986); Boyle (1986); Katz, Kochan, and Gobeille (1983); Katz Kochan, and Weber (1985); Smith (1986); Cooke (1989a).

[3] See McIntosh (1988).

[4] See Roadley (1988); Cutcher-Gershenfeld (1988).

[5] See Boylston (1986); Katz, Kochan, and Gobeille (1983); Camens (1986).

[6] See Dulworth (1985); Lazes and Costanza (1984).

[7] See Guest (1979); Goodman (1980); Lawler, Ledford and Seashore (1984, p. 110); Goodman and Lawler (1979); Siegel and Weinberg (1982).

[8] See Guest (1979); Watts (1982); U.S. Department of Labor (1982); Smith (1988).

[9] See Boyle (1986); Goodman (1980); U.S. Department of Labor (1982); Walton (1985); Verma and McKersie (1987).

[10] See Driscoll (1979); Boyle (1986); Siegel and Weinberg (1982); U.S. Department of Labor (1982 and 1983); Smith (1988).

[11] See Cohen-Rosenthal and Burton (1987, p. 31); U.S. Department of Labor (1982 and 1983); Lawler and Drexler (1978).

[12] See Fuller (1981); Boyle (1986); Burck (1981a); Kochan, Katz and Mower (1984, pp. 134-138); Cooke (1986b).

[13] See Jick, McKersie, and Greenblugh (1982); Lawler and Drexler (1978); Siegel and Weinberg (1982); U.S. Department of Labor (1982); Lee (1987).

[14] See Lawler and Drexler (1978); Guest (1979); Schlesinger and Walton (1977); Shrank (1978); Rosow (1979); Jacoby (1983); Siegel and Weinberg (1982); Rosow (1986).

[15] See Schlesinger and Walton (1977); Simmons and Mares (1985, ch. 13).

[16] See Cutcher-Gershenfeld (1988).

[17] See Guest (1979); Goodman (1980); Work in America Institute, Inc. (1982, ch. 3); Parker (1985, ch. 2).

[18] See Kochan, Katz and Mower (1984, ch. 4).

[19] See U.S. Department of Labor (1983); Ruttenberg (1988).

[20] See U.S. Department of Labor (1983); Work in America Institute, Inc. (1982, ch. 3); McIntosh (1988).

[21] See Burck (1981); Fuller (1981); Boyle (1986); Kochan, Katz, and Mower (1984, pp. 134-138); Cooke (1989b).

[22] See Schuster (1984, ch. 6); Cummings and Molloy (1977, ch. 21, 22); Dulworth (1985); Pearlstein (1988); Ross and Ross (1986).

[23] See Burck (1981a); Kochan, Katz, and Mower (1984, pp. 134-138); Smith (1988).

[24] See Oswald (1986); Simmons and Mares (1985, ch. 14).

[25] See Zager (1977); Schuster (1984, ch. 6); Simmons and Mares (1985, ch. 14); Work in America Institute, Inc. (1982, ch. 3); Camens (1986).

[26] See Burck (1981); Cammann, Lawler, Ledford, and Seashore (1984, pp. 11, 21-22); Greenberg and Glaser (1980); Dyer, Lipsky, and Kochan (1977); Burck (1981b).

[27] See Fraser (1981); Cohen-Rosenthal and Burton (1987, p. 20); Simmons and Mares (1985, ch. 14); Work in America Institute, Inc. (1982, ch. 4).

[28] See Cohen-Rosenthal and Burton (1987, pp. 16-17); Kochan, Katz, and Mower (1984, pp. 134-146); Watts (1982).

[29] See Burck (1981a); Kochan, Katz, and Mower (1984, pp. 138-146).

[30] See Driscoll (1979); Smith (1988).

[31] See Goodman (1980, p. 490); Cohen-Rosenthal and Burton (1987, pp. 17-18); U.S. Department of Labor (1982, 1983); Work in America Institute, Inc. (1982, ch. 4); Hoyer and Huszczo, (1988).

[32] See Hammer and Stern (1986).

[33] See Schlesinger and Walton (1977); Kochan, Katz, and Mower (1984, pp. 134-146); Guest (1979); Watts (1982).

[34] See Hoyer and Huszczo (1988).

REFERENCES

Barbash, Jack. The Elements of Industrial Relations, Madison: University of Wisconsin Press, 1984.

Bluestone, Irving. "Joint Action: The New Track of Labor-Management Relations," Workplace Democracy, No. 56, Spring 1987: 14-15, 25.

Boyle, Fosten A. "An Evolving Process of Participation: Honeywell and Teamsters Local 1145," in Jerome M. Rosow, editor Teamwork, New York: Pergamon Press, 1986, 146-168.

Boylston, Benjamin C. "Employee Involvement and Cultural Change at Bethlehem Steel," in Jerome M. Rosow, editor Teamwork, New York: Pergamon Press, 1986, 89-109.

Bulvony, Matt. "Making Money -- And History at Weirton," Businessweek, November 12, 1984, 136-140.

Burck, Charles G. "Working Smarter," Fortune, June 1981, 68-73.

Burck, Charles G. "What's in It for the Unions?" Fortune, August 24, 1981, 88-92.

BNA. "Working Conditions and Safety," No. 1067, April 24, 1986.

Camens, Sam. "Labor-Management Participation Teams in the Basic Steel Industry," in Jerome M. Rosow, editor, Teamwork, New York: Pergamon Press, 1986, 110-118.

Cammann, Cortlandt, Edward E. Lawler III, Gerald E. Ledford, and Stanley E. Seashore. Management-Labor Cooperation in Quality of Worklife Experiments: Comparative Analysis of Eight Cases, a technical report to the U.S. Department of Labor, University of Michigan, 1984.

Chamberlain, Neil W. Collective Bargaining, New York: McGraw Hill, 1981.

Cohen-Rosenthal, Edward and Cynthia E. Burton. Mutual Gains, New York: Praeger, 1987.

Contino, Ronald. "Productivity Gains Through Labor-Management Cooperation at the N.Y.C. Department of Sanitation Bureau of Motor Equipment," in Jerome M. Rosow, editor Teamwork, New York: Pergamon Press, 1986, 169-186.

Cooke, William N. "Toward a General Theory of Industrial Relations," in David B. Lipsky, editor, Advances in Industrial and Labor Relations, Vol. 2, Greenwich, CT: JAI Press, 1985, 233-252.

Cooke, William N. "Labor-Management Cooperation and Work Place Innovations," report to Michigan Department of Commerce, 1988.

Cooke, William N. and David G. Meyer. "Structural and Market Predictions of Corporate Labor Relations Strategies," Industrial and Labor Relations Review, in press, 1989.

Cooke William N.(a) "Improving Productivity and Quality Through Collaboration," Industrial Relations, Vol. 28, No. 2, Spring, 1989.

Cooke, William N.(b) "Conditions Under Which Collaboration Improves Employee-Supervisor Relations," unpublished, 1989.

Cooke, William N.(c) Labor-Management Collaboration: New Partnerships or Going in Circles?, Kalamazoo: W.E. Upjohn Institute for Employment Research, forthcoming, 1989.

Cummings, Thomas G. and Edmond S. Molloy. Improving Productivity and the Quality of Work Life, New York: Praeger, 1977.

Cutcher-Gershenfeld, Joel. "Labor-Management Cooperation in American Communities: What's in It for the Unions?", The Annals, 473, May 1984, 76-87.

Cutcher-Gershenfeld, Joel. The Case of Xerox Corporation and the Amalagamated Clothing and Textile Workers Union," U.S. Department of Labor, BLMR 123, 1988.

Delaney, John T., Casey Ichniowski, and David Lewin. "Employee Involvement Programs and Firm Performance," Proceedings of the 41st IRRA, 1988.

Douty, Harry. Labor-Management Productivity Committees in American Industry, Washington, D.C.: National Commission on Productivity and Work Quality, 1975.

Driscoll, James W. "Labor-Management Panels: Three Case Studies," Monthly Labor Review 103, 6, June 1980, 41-44.

Dulworth, Michael. "Employee Involvement and Gainsharing Produce Results at Eggers Industries," Labor-Management Cooperation Brief, U.S. Department of Labor, Bureau of Labor-Management Relations and Cooperative Programs, March 1985.

Dyer, Lee, David B. Lipsky and Thomas Kochan. "Union Attitudes Toward Management Cooperation," Industrial Relations, 16, 2, May 1977, 163-172.

Ephlin, Donald F. "United Auto Workers: Pioneers in Labor-Management Partnership," in Jerome M. Rosow, editor Teamwork, New York: Pergamon Press, 1986, 133-145.

Fraser, Douglas A. "A Labor Director Looks at the Board," in Jerome M. Rosow, editor Teamwork, New York: Pergamon Press, 1986, 56-72.

Freedman, Audrey. Managing Labor Relations, New York: The Conference Board, 1979.

Freedman, Audrey. The New Look in Wage Bargaining, New York: The Conference Board, 1985.

Fuller, Steven H. "Employee Participation for Productivity: A Management View," in Jerome M. Rosow, editor Productivity: Prospects for Growth, New York: Van Nostrand Reinbold, 1981, 296-309.

Goodman, Paul S. "Realities of Improving the Quality of Work Life: Quality-of-Work Life Projects in 1980s," in Proceedings of the 1980 Spring Meeting, Industrial Relations Research Association, Madison, Wis., 1980, 487-494.

Goodman, Paul S. and Edward E. Lawler, III. "United States," in New Forms of Work Organization, 1, Geneva: International Labour Organization, 1979, 141-173.

Greenberg, Paul and Edward Glaser. Some Issues in Joint Union Management Quality of Work Life Improvement Efforts, Kalamazoo, MI: Upjohn Institute, 1980.

Guest, Robert H. "Quality of Work Life - Learning from Tarrytown," Harvard Business Review, 57, 4, July-August 1979, 76-87.

Hammer, Tove H. and Robert N. Stern. "A Yo-Yo Model of Cooperation: Union Participation in Management at the Rath Packing Company," Industrial and Labor Relations Review, Vol. 39, No. 3, April 1986, 337-349.

Hoyer, Denise T. and Gregory E. Huszczo. Forging Partnership Through Employee Involvement, U.S. Department of Labor, BLMR 130, 1988.

Jacoby, Sanford. "Union-Management Cooperation in the United States: Lessons from the 1920's," Industrial and Labor Relations Review, 37, 1, October 1983, 18-33.

Jick, Todd D., Robert B. McKersie, Leonard Greenhalgh. "A Process Analysis of Labor-Management Committee Problem Solving," Proceedings of the 1982 Annual Meeting, Industrial Relations Research association, Madison, Wis., 1982, 182-188.

Katz, Harry C., Thomas A. Kochan, and Kenneth R. Gobeille. "Industrial Relations Performance, Economic Performance, and QWL Programs: An Interplant Analysis," Industrial and Labor Relations Review, 37, 1, October 1983, 3-17.

Katz, Harry C., Thomas A. Kochan, and Kenneth R. Gobeille. "Industrial Relations Performance, Economic Performance, and QWL Programs: An Interplant Analysis," Academy of Management Journal, 28, 3, September 1985, 509-526.

Katz, Harry C., Thomas A. Kochan, and Jeffrey H. Keefe. "Industrial Relations and Productivity in the U.S. Automobile Industry," Brookings Papers on Economic Activity, 3, 1987, 685-715.

Kochan, Thomas A., Harry C. Katz, and Nancy R. Mower. Worker Participation and American Unions, Kalamazoo, MI: Upjohn Institute, 1984

Kochan, Thomas A., and Lee Dyer. "A Model of Organizational Change in the Context of Union-Management Relations," The Journal of Applied Behavioral Science, 12, 1, January-February-March 1976, 59-78.

Kochan, Thomas A., Robert B. McKersie, and John Chalykoff. "The Effects of Corporate Strategy and Workplace Innovations on Union Representation," Industrial and Labor Relations Review, 39, 4, July 1986, 487-501.

Kochan, Thomas A., Harry C. Katz, and Robert B. McKersie. The Transformation of American Industrial Relations, New York: Basic Books, Inc., 1986.

Kochan, Thomas A. and Joel Cutcher-Gershenfeld. "Institutionizing and Diffusing Innovations in Industrial Relations," U.S. Department of Labor, BLMR 128, 1988.

Lawler, Edward, E. III, and John A. Drexler, Jr. "Dynamics of Establishing Cooperative Quality of Work Life Projects," Monthly Labor Review, 101, March 1978, 23-28.

Lazes, Peter and Tony Costanza. "Xerox Cuts Costs Without Layoffs Through Union-Management Collaboration," Labor-Management Cooperation Brief, U.S. Department of Labor, Bureau of Labor-Management Relations and Cooperative Programs, July 1984.

Lee, Barbara. "The Ethicon/ACTWU Work Involvement Process," U.S. Department of Labor, BLMR III, 1987.

McIntosh, Phyllis L. "Labor Compact Key to New Employee-Management Partnership at Dayton Power and Light," U.S. Department of Labor, Brief, No. 12, January 1988.

Meyer, David G. and William N. Cooke. "Union-Management Strategies and Corporate Financial Performance," unpublished, 1989.

New York Stock Exchange. People and Productivity: A Challenge to Corporate America, 1982.

Oswald, Rudolph A. "Joint Labor-Management Programs," in Jerome M. Rosow, editor, Teamwork, New York: Pergamon PRess, 1986, 26-40.

Parker, Mike. Inside the Circle: A Union Guide to QWL, Boston: South End Press, 1985.

Pearstein, Gloria. "Preston Trucking Drives for Productivity," U.S. Department of Labor, Brief, No. 13, February 1988.

Roadley, Thomas H., "Riding the Road to Recovery at Harley-Davidson," U.S. Department of Labor, Brief, No. 15, April 1988.

Rosenberg, Richard D. and Eliezer Rosenstein. "Participation and Productivity: An Empirical Study," Industrial and Labor Relations Review, 33, 3, April 1980, 355-361.

Rosow, Jerome M. "Quality-of Work Life Issues for the 1980's," in Clark Kerr and Jerome Rosow, editors, Work in America: The Decade Ahead, New York: Van Nostrand Reinhold, Co., 1979, 157-187.

Rosow, Jerome M. "Teamwork: Pros, Cons, and Prospects for the Future," in Rosow, editor, Teamwork, New York: Pergamon Press, 1986.

Ross, Timothy L. and Ruth Ann Ross. "Dana's Hyco Plant Successfully Integrates Quality Circles and Gainsharing," U.S. Department of Labor, Brief, No. 7, July 1986.

Ruttenberg, Ruth. "The Role of Labor-Management Committees in Safeguarding Worker Safety and Health," U.S. Department of Labor, BLMR 121, 1988.

Schlesinger, Leonard A. and Richard E. Walton. "The Process of Work Restructuring and Its Impact on Collective Bargaining," Monthly Labor Review, 100, 4, April 1977, 52-55.

Schrank, Robert. Ten Thousand Working Days, Cambridge, MA: The MIT Press, 1978.

Schuster, Michael H. Union-Management Cooperation, Kalamazoo, MI: Upjohn Institute, 1984.

Schuster, Michael. "The Impact of Union-Management Cooperation on Productivity and Employment," Industrial and Labor Relations Review, Vol. 36, 3, April 1983, 415-430.

Siegel, Irving H., and Edgar Weinberg. Labor-Management Cooperation: The American Experience, Kalamazoo, MI: Upjohn Institute, 1982.

Simmons, John and William Mares. Working Together, New York: New York University Press, 1982.

Smaby, Beverly, Christopher Meek, Catherine Barnes, Joseph Blasi, and Preeta Bansal. "Labor-Management Cooperation at Eastern Airlines," U.S. Department of Labor, BLMR 118, 1988.

Smith, Michal. "Employee Involvement Fuels Dramatic Turnaround at Ford's Louisville Assembly Plant," U.S. Department of Labor, Brief, No. 9, November 1986.

Smith, Michal, "Aladdin's Magic," U.S. Department of Labor, Brief, No. 12, January 1988.

Thompson, Philip C. "Quality Circles at Matin Marietta Corporation, Denver Aerospace/Michoud Division," The Innovative Organization, New York: Pergamon Press, 1982, 3-20.

U.S. Department of Labor. Labor-Management Services Administration, Report of the Secretary of Labor's Symposium on Cooperative Labor-Management Programs, Washington, D.C., 1982.

U.S. Department of Labor. Labor-Management Services Administration, *Report of the Secretary of Labor's Southeast Regional Symposium on Cooperative Labor-Management Programs*, Washington, D.C., 1983.

Verma, Anil and Robert B. McKersie. "Employee Involvement: The Implications of Noninvolvement by Unions," *Industrial and Labor Relations Review*, Vol. 40, 4, July 1987, 556-568.

Voos, Paula B. "The Influence of Cooperative Programs on Union-Management Relations, Flexibility, and Other Labor Relations Outcomes," *Journal of Labor Research*, forthcoming.

Voos, Paula V. "Managerial Perceptions of the Economic Impact of Labor Relations Programs," *Industrial and Labor Relations Review*, 40, 2, January 1987, 195-208.

Walton, Richard E. "From Control to Commitment in the Workplace," *Harvard Business Review*, March-April, 1985.

Watts, Glen. "Quality of Work Life," *Perspective*, Labor Relations Press, October 1982.

Weiss, Richard M. *Dealing with Alcoholism in the Workplace*, Conference Board, 1980.

Wintergreen Symposium Report. U.S. Department of Labor, BLMR 101, 1986.

Work in America Institute, Inc. *Productivity Through Work Innovations*, New York: Pergamon Press, 1982.

Whyte, William F., Tove H. Hammer, Christopher Meek, Reed Nelson, and Robert N. Stern. *Worker Participation and Ownership*, Ithaca: ILR Press, 1983.

39. CURRENT ECONOMIC ISSUES IN EMPLOYEE BENEFITS

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I. Introduction

For at least three reasons, employee benefits have become a central issue in employee compensation in recent years, rivaling wage levels and wage changes as a topic of research and policy debate. First, employee benefits constitute a far greater proportion of total compensation today than at the end of World War II. This remains true even though, as will be shown, the growth of employee benefits as a proportion of compensation has slowed in the 1980s. Understanding the reasons for the growth or lack of growth of employee benefits is clearly important to a general understanding of worker compensation. Second, the significance of the two private employee benefits on which dollar expenditures are largest--pensions and health insurance--has been enhanced by an increasing recognition that both are in part public goods. Both retirement income and health care in the U.S. are provided by a dual public-private system in which the private components play a pivotal role. Third, in recognition of the public-goods aspects of pensions and health insurance, those benefits have been subject to an increasing number of regulations and special tax provisions during the past two decades. How these influences have altered the provision of employee benefits has been the subject of considerable research, although many questions remain.

This paper offers a treatment of the economic issues surrounding employee benefits. Although it would be impossible to offer a thorough treatment of all the issues encompassed by employee benefits in a short piece, the attempt is to touch on the important issues, and to point in appropriate directions when fuller treatment is not given.

The plan of the paper is as follows. Section II discusses recent trends in employee benefits, and attempts to place employee benefits in the context of nonwage labor costs generally. Section II also includes a discussion of employee benefit coverage and how coverage is related to various worker characteristics. An important goal of Section II is to answer questions about who is covered by what benefits, and why.

Section III describes what recent research has found regarding recent trends in voluntary employee benefits, and the reasons for those trends. Although further research on this topic is necessary, existing evidence suggests that changes in real income and marginal tax rates go a long way toward explaining trends in the provision of private pensions and health insurance.

Section IV is an attempt to develop guidelines and norms for evaluating changes in the tax treatment and regulation of employee benefits. Static economic efficiency, capital accumulation and economic growth, and issues of equity and income distribution are all considered.

Section V describes some recently completed estimates of how changing the tax treatment of employee benefits would alter compensation, federal revenues, and income distribution. The estimates presented are intended to contribute to the following questions. Should employer contributions to employee benefit plans be taxed as income, or should the current policy of favorable tax treatment be continued? If employer contributions are taxed, should contributions to all types of plans be taxed, or only contributions to some, such as health insurance? If employer contributions are taxed, should all contributions be taxed, or only contributions above certain limits or caps?

Section VI offers a discussion of several additional topics that are important to pensions and health insurance, and that have figured prominently in recent policy discussions: the regulation and restructuring of pension plans, health-care cost containment, retiree health insurance, and regulation of health insurance (Section 89). The main conclusion of this section is that we have only a sketchy understanding of how regulation has altered the kinds of pension and health insurance plans provided by employers, and of how further changes in regulation might alter pension and health insurance plans in desirable ways.

Section VII briefly explores flexible benefit plans (also known as cafeteria plans), and the issue of dependent care (child care), both of which have received much attention lately.

Section VIII discusses policy options and makes some recommendations. The recommendations focus on whether the tax treatment or regulation of the two employee benefits that account for over 90 percent of all voluntary employer-provided employee benefits--pensions and health insurance--should be changed. The focus on tax treatment and regulation seems appropriate because the key features of current policy toward employee benefits are: (a) the exclusion of employer contributions to employee benefit plans (and investment earnings on accumulated assets) from the federal personal income tax and from payroll taxes,[1] (b) the regulation, through ERISA (the Employee Retirement Income Security Act, as amended) and the tax code, of private pensions, and (c) the regulation, through ERISA and the tax code, of private health insurance plans.

The paper also includes two appendixes. Appendix A discusses various data problems that have plagued those who have done research on employee benefits. Appendix B offers a brief review of recent studies of the tax treatment of employee benefits.

II. Employee Benefits: Trends and Coverage

The growth of employee benefits in the years following World War II has caught the attention of economists and policy makers for at least three reasons. First as the proportion of compensation paid as employee benefits grew, the proportion of all compensation paid as wages and taxed under the federal income tax declined (Chen 1981; Munnell 1984). Second, the growth of employee benefits had implications for employment costs, mobility, turnover, and the organization of production--for example, whether part-time and full-time workers would be employed (Hart 1984). Third, as several economists have argued, the growth of employee benefits reflected misallocated resources and reduced economic welfare, because tax subsidies for employee benefits led to greater than optimal provision of employee benefits (see, for example, Feldstein 1977; Feldstein and Friedman 1977).

A. Employee Benefits in the Context of Labor Costs

It is useful to place employee benefits in the context of other costs of employing labor.[2] Table 1 displays data on all nonwage labor costs (NWLCs) as a proportion of total labor costs for U.S. private domestic industries in 1965 (or 1966) and 1985. NWLCs are broken down into six groups: payments for time not worked (row a), statutory social welfare costs (row c), voluntary social welfare costs (row d), benefits in-kind (row e), other expenses of a social nature (row f), and vocational training (row g). Total social welfare costs--the sum of rows c and d--are shown in row b, and total NWLCs are shown in row h. The U.S. National Income and Product Accounts provide data only on statutory and voluntary welfare costs (rows b, c, and d--see the Appendix on data problems).[3]

Row h of Table 1 suggests that NWLCs have grown dramatically during the last 20 years in the U.S. Defining NWLCs as contributions to social welfare programs (see the column headed "National Income and Product Accounts"), NWLCs have grown from just under 10 percent of total labor cost in 1966 to about 16 percent in the mid 1980s. Defining NWLCs more broadly to include payments for days not worked, benefits in-kind, other social expenses, and vocational training (see column headed "Chamber of Commerce"), NWLCs have grown from just under 20 percent of total labor costs in 1965 to over 27 percent in 1985.

Although row h of Table 1 shows that NWLCs as a whole have grown significantly during the past 20 years, other rows of Table 1 reveal that not all components of NWLCs have increased. Chamber of Commerce data not shown in Table 1 suggest that, although payments for days not worked grew as a proportion of total labor costs during the 1970s, during 1982 through 1985 they returned to roughly the same level as during the late 1960s (see row a). Benefits in-kind actually fell as a proportion of total labor costs during the 20-year period (row e). Other social expenses grew insignificantly (row f), and vocational training remained a minuscule proportion of total labor costs (row g).

The conclusion is that the growth of NWLCs during the 1965-1985 period can be attributed almost entirely to the growth of statutory and voluntary employer contributions to social welfare plans (see rows c and d).

Table 2 shows more detailed statistics on the mix of compensation in the U.S. during 1968 through 1986. The statistics are derived from the National Income and Product Accounts (U.S. Department of Commerce 1986, 1987), and divide compensation into three parts--wages and salaries, legally required nonwages (mainly Social Security, Unemployment Insurance, and Workers' Compensation, which were referred to as statutory social welfare costs in Table 1), and voluntary nonwages (mainly private pensions and health insurance, which were referred to as voluntary social welfare costs in Table 1).[4]

The annual percentage change figures suggest that, over the past 20 years, the pattern of growth of legally required nonwages has been more even than that of voluntary nonwages. The data indicate that legally required nonwages grew (as a proportion of total compensation) at an annual rate of 3.1 percent from 1968 to 1975, at an annual rate of 2.5 percent from 1975 to 1980, and at an annual rate of 1.6 percent from 1980 to 1985. This slight deceleration of growth does mask some changes within the package of statutory social welfare costs: Contributions to social security (OASDHI) grew slowly during the late 1970s, but have grown rapidly since the 1983 reform of the social security financing system. (These data are not shown in the table.) Workers' Compensation grew rapidly during the 1970s, only to decline as a proportion of total labor costs in the 1980s. (Again, these data are not shown in the table.) Nevertheless, the slowdown of the growth of statutory social welfare costs is not dramatic.

In contrast, the growth of voluntary nonwages slowed dramatically and plateaued during the 20 year period, as can be seen in row d of Table 1. The data show that voluntary nonwages grew rapidly between 1968 and 1975--at an annual rate of 5.9 percent. But voluntary nonwages grew less rapidly during the late 1970s (at an annual rate of 3.1 percent). Moreover, voluntary nonwages fell at an annual rate of 1.2 percent between 1980 and 1985.

B. Disaggregations by Industry

Table 3 displays NWLCs as a proportion of total labor costs in five years, desegregated by industry. These industry disaggregations are based on the National Income and Product Accounts. Each proportion shown is simply the sum of Employer Contributions to Social Insurance (Accounts Table 6.12) and Other Labor Income (Table 6.13) divided by Compensation (Table 6.4).

Table 3 indicates much interindustry variation in the incidence of NWLCs. Moreover, the pattern of interindustry variation changed over the 20 year period in question. In 1966, communications and utilities had the largest proportion of NWLCs (roughly 13 to 15.5 percent), whereas agriculture, services, the trade sector, and construction had the lowest (6 to 8 percent). By 1985, this pattern had changed somewhat: construction experienced an explosion of NWLCs, and had a proportion of NWLCs similar to manufacturing. Also, NWLCs in finance, insurance, and real estate had lost ground in relative terms, so that the financial sector had NWLCs at roughly the economy-wide average. These interindustry patterns are treated further in section I.D below, when their relationships to skill and overtime hours are discussed.

C. Estimates of Fixed and Variable Labor Costs

Table 4 displays estimates of the percentage of total labor costs that are fixed NWLCs, and of the fixed/variable labor cost ratio.[5] A comparison of Table 4 with Table 3 suggests that the growth of fixed NWLCs, both in aggregate and by industry, has been similar to that of NWLCs generally. That is, NWLCs as a proportion of total labor cost and the fixed/variable labor cost ratio both grew by 66 percent between 1966 and 1985. Also, the growth of NWLCs in an industry is mirrored in the growth of the fixed/variable labor cost ratio in the same industry with only two notable exceptions--construction, where NWLCs grew by 118 percent while the fixed/variable labor cost ratio grew by 179 percent, and wholesale trade, where NWLCs grew by 78 percent while the fixed/variable labor cost ratio grew by 105 percent.

D. Fixed Labor Costs, Skill Levels, and Overtime Hours

Table 5 attempts to show the relationships between fixed labor costs and skill levels. The Table repeats the 1985 data on fixed/variable cost ratios from Table 4, and adds data on skill levels by industry. The variable used to proxy skill level is real capital consumption allowance per full-time equivalent worker. This variable has been used frequently to approximate firm-specific human capital, for the reason that it measures real capital use per worker, which in turn is believed to be related to the amount of firm-specific skills possessed by workers (Long and Scott, 1982). The Spearman rank correlation coefficient between the fixed/variable cost ratio and the skill proxy is 0.88, suggesting that industries that use highly skilled labor also face (or voluntarily take on) relatively high fixed labor costs.

Data not presented here suggest that fixed/variable cost ratio is also related to average overtime hours in an industry (Hart and others 1988), although the relationship is weaker than that between the fixed/variable cost ratio and skill. Nevertheless, the evidence suggests that industries facing high fixed labor costs tend to make greater use of overtime, rather than add workers to their payrolls. In that the relationship between fixed labor costs and skill appears stronger that between fixed labor costs and overtime hours, the figures accord with Hart's findings for U.K. manufacturing (Hart, 1984, Table 2.9).

E. Employee Benefit Coverage and Worker Characteristics

The discussion to this point has been mute regarding how employee benefits are distributed among individual workers. Clearly, given the public interest in retirement income and access to health care, it is important to understand at a micro level the extent to which workers are covered in employer-provided pension and health insurance plans, and further to know the characteristics of those workers who are covered.

In addressing questions of pension and health insurance coverage, it is possible to rely on the March 1988 Current Population Survey, which includes responses to a series of questions about the inclusion of workers in employer-provided pension and health insurance plans. Regarding pensions, the survey questions of main interest are, "Other than Social Security did any employer or union that you worked for in 1987 have a pension or other type of retirement plan for any of its employees?" and "Were you included in that plan?" Regarding private health insurance, the questions of interest concern whether a worker was covered by a health insurance plan, whether that plan was in the worker's name, whether the plan was provided through a current or former employer or union, and whether the employer or union paid all, part, or none of the cost of the plan. Note that we are concerned here only about a worker's inclusion in an employer-provided pension or health insurance plan. Whether a plan covers others in the household and whether a member of a household is covered by someone else's plan are distinct issues not considered here.

Table 6 displays data on the distribution of employer-provided pensions and health insurance among workers aged 18 or older who were not in the military and had positive earnings in 1987. The first row of the table shows that about 43 percent of these workers were included in an employer-provided pension plan, whereas nearly 60 percent were included in a group health plan. Of those included in a group health plan, about two-fifths (24.1/59.9) were in plans that were fully paid for by the employer. Finally, 37.5 percent of these workers were covered by both pension and group health plans.

Additional figures in Table 6 show that there is much variation among workers in pension and health insurance coverage: Female workers are less likely to be covered than male workers; young workers are less likely to be covered than old (except for those 65 and over); Hispanics are less likely to be covered than other workers; workers with lower educational attainment are less likely to be covered; nonunionized workers are less likely to be covered than unionized workers; part-time workers are less likely to be covered than full-time workers; the self-employed are less likely to be covered; and those with lower earnings are less likely to be covered than those with higher earnings. These coverage patterns hold for both pension and group-health provision.

There are also sharp differences in pension and health insurance provision among industries. Public administration, transportation, communications, utilities, and manufacturing all have relatively high percentages of workers covered by both pension and group health plans. Agriculture, services (other than professional), and retail trade have relatively low percentages of covered workers. Industries that have relatively high pension coverage also tend to have relatively high health insurance coverage: the Spearman rank correlation coefficient between industry pension and group health coverage is 0.96.

The variation in employee benefit coverage across occupations is far less striking than the variation across industries. Managers and professional/technical workers do have relatively high coverage by pension and group health plans. Sales workers, service workers, and laborers have relatively low coverage. But the differential between the best-covered and worst-covered occupations is far smaller than that between the best- and worst-covered industries.

Although the means displayed in Table 6 offer a picture of the distributional pattern of employee benefits, they provide little insight into the reasons for that pattern. For example, it is clear that female workers are less likely than male workers to be included in employer-provided pension or health insurance plans, but it is unclear whether this differential should be attributed purely to gender, or whether it is partly due to the part-time/full-time status, industry of employment, or occupation of women. A rough attempt to explain the pattern of worker coverage in pension and health insurance plans is offered in Table 7, which displays the results of estimating four linear probability models: one each for inclusion in a pension plan, inclusion in a group health insurance plan, inclusion in a group health plan that was wholly employer-paid, and inclusion in both a pension plan and a group health plan.

Each of the linear probability models in Table 7 is estimated by regressing a zero-one dummy variable (for example, 1 = included in a pension plan; zero = excluded) on explanatory variables capturing gender, age, ethnicity, education, union coverage, part-time/full-time status, self-employment status, annual earnings, industry, occupation, and household status. The interpretation of the coefficients is straightforward: Each shows the change in the probability of being included in a benefit plan (that is, the probability that the dependent variable equals one) associated with a unit increase in the independent variable. (Note that a maximum likelihood method such as logit or probit is appropriate when, as here, the dependent variable is zero-one. Accordingly, these estimates should be considered exploratory only.)

Consider the coefficient of the female variable in the pension equation (0.022). The inference is that, other things equal, female workers are about 2 percent more likely to be included in an employer-provided pension plan than are male workers. This is somewhat surprising in view of the large negative differential between female and male workers in pension coverage seen in Table 6. It appears that variables such as part-time status, union coverage, earnings, industry, and occupation explain much of the difference between female and male workers in pension coverage. (Results not displayed in Table 7 show that the coefficient of the female variable is positive even without controlling for industry, occupation, and household status.)

Several variables appear strongly associated with large changes in the probability of being covered by pension and group health plans. Workers aged 35-64 have a probability of pension coverage that is higher by 0.13 than workers aged 18-24. Part-time and self-employed workers have far lower probabilities of being covered by pension or health insurance, other things equal. Also, the probability of benefit coverage increases markedly as annual earnings increase up to $30,000. But there is no change in the probability of benefit coverage as earnings increase beyond $30,000.

Industry of employment is strongly related to probability of benefit coverage. Employment in manufacturing, transportation, communications, and public utilities, and especially in public administration, sharply increases the probability of being covered by a pension or group health plan. On the other hand, occupation has a much weaker association with the probability of benefit coverage than does industry of employment.

A striking and surprising result shown in Table 7 pertains to union coverage. Although union coverage increases the probability of inclusion in a pension plan by over 11 percent, it is unrelated to inclusion in a health insurance plan.

Other variables are associated only weakly with the probability of benefit coverage. As already noted, and surprisingly, differences between female and male workers are quite small once other variables are controlled for. Finally, ethnicity and household status play only minor roles in employee benefit coverage, according to the estimates in Table 7.

The estimates displayed in Table 7, although they provide some insight into the reasons for employee benefit provision, tell us nothing about whether changes have occurred in the pattern of benefit provision over time. Neither do they tell us why changes in the pattern of employee benefit provision might take place. In future research, high priority should be given to analyzing both the existence and causes of changes in the pattern of employee benefit provision.

III. Explaining the Pattern of Growth of Pensions and Health Insurance

Table 2 illustrated that voluntary nonwages, which are mainly the costs of pensions and health insurance, grew at an annual rate of about 6 percent 1968 and 1975, at an annual rate of roughly 3 percent during the late 1970s, and actually declined at a rate of about 1 percent from 1980 through 1986. This slowing growth of pensions and health insurance requires an explanation.

Unfortunately, there is less certainty about the causes of the pattern of growth of voluntary employee benefits than there is about the pattern itself. The litany of reasons for the provision of voluntary employee benefits includes: (a) preferential treatment under the federal personal income tax code; (b) rising real incomes; (c) economies of scale in the provision of pensions and health insurance (Mitchell and Andrews 1981); (d) efforts to improve workers' productivity and reduce turnover by deferring payment of benefits (Logue 1979; Lazear 1981); (e) unionization (Freeman 1981; Alpert 1982); (f) changing demographic composition of the labor force; (g) workers' preferences and desires; (h) capital gains and losses to pension funds resulting from changing asset prices (Munnell 1987); and (i) changing social norms. [Good general discussions of these factors include Rice (1966a, 1966b), Lester (1967), and Long and Scott (1982)].

To what degree can each of these factors explain the pattern of growth of employee benefits? Although several studies have found evidence that unions and collective bargaining exert a positive independent effect on the provision of nonwage benefits (Freeman 1981; Alpert 1982; Rossiter and Taylor 1982; Fosu 1984; and Mincer 1983), the stagnation of private-sector union growth since the 1950s makes unionism a rather unpromising source of significant changes in employee benefit provision.[6] Similarly, it is unclear that the "technology" of benefit provision has changed so that scale economies of benefit provision now exist where they did not before (Mitchell and Andrews 1981).

Both theoretical and empirical work suggests strongly that deferral of income reduces labor turnover, and by inference, improves productivity (Logue 1979; Schiller and Weiss 1979; Lazear 1981; Wolf and Levy 1984). But again, it is unclear that the desire to reduce turnover has been a driving force behind changes in the pattern of provision of employee benefits. The only existing study of this question, by Mumy and Manson (1985), concludes that considerations of productivity and turnover are far less potent explanators of pension growth than is the tax treatment of pension contributions. Indeed, recent restructuring of pension plans--that is, the movement away from defined-benefit plans and toward defined-contribution plans--tends to corroborate Mumy and Manson's findings.

The most likely causes of changes in the growth of employee benefits, then, are the changing composition and aging of the labor force, changes in the tax treatment of benefits, and changes in real incomes. Several early studies of employee benefit provision concentrated on the growth of pensions and health insurance, since up until 1980 growth (not slowing growth or stagnation) was the pattern that required explanation. In particular, most of these studies (see Appendix B) pointed to increases in the marginal tax rate on earned income as the main explanator of employee benefit growth, and gave correspondingly short shrift to changing real incomes and the aging of the labor force.

The present discussion will rely on a recent study by Woodbury and Huang (1988), which attempts to separate the effects of income and favorable tax treatment by using a pooled time-series of industry cross-sections from the National Income and Product Accounts. Huang and I estimate a model of the demand for employee benefits that indicates how responsive the employee benefit share of compensation is to changes in the marginal tax rate on wages (that is, to the tax-price of employee benefits), changes in real income (or real total compensation), and other variables. These other variables include demographic characteristics of the workforce such as age and gender, whether the work performed by employees was production or nonproduction, average establishment size, the capital-labor ratio (as a proxy for firm-specific human capital), and the annual percentage change in output.

Two findings are central to our explanation of changes in the employee benefit share of compensation during the 1969-1986 period. First, in accord with the results of several earlier studies, we find that employee benefits and wages are good substitutes for each other. Hence, when the marginal tax rate on wages goes up, workers demand a greater share of their compensation as employee benefits, which are untaxed at the time of receipt. And second, we find that the demand for employee benefits is income elastic, whereas the demand for wages is income inelastic. Hence, when real incomes rise, workers demand a greater share of their compensation as employee benefits. This latter finding differs from the early studies, most of which found the effects of income on employee benefits to be small, had difficulty separating income effects from tax-price effects, or ignored income effects altogether.[7]

Figure 1 summarizes our findings graphically. The line with squares and labeled "Actual" shows the actual employee benefit share in each year from 1970 to 1986; the line with diamonds and labeled "Tax-Price Effect Only" shows the employee benefit share simulated by allowing marginal tax rates to take their actual value in each year, but holding all else constant; and the line with X's and labeled "Income Effect Only" shows the employee benefit share simulated by allowing real income to take its actual value in each year, but holding all else constant.

In addition, Figure 1 shows the predicted (or forecast) employee benefit share (see the line with +'s and labeled "Predicted"). This predicted share is obtained by substituting current year values of all independent variables into our estimating equation, and solving for the employee benefit share. Finally, Figure 1 shows the employee benefit share simulated by allowing both marginal tax rates and real income to take their actual values in each year, but holding all else constant (see the line with triangles and labeled "Both Tax-Price and Income Effects").

What we find is that changes in the tax-price of benefits relative to wages explain about half of the change in the employee-benefit share that occurred between 1970 and each year from 1972 through 1986. Moreover, the downturn in the employee benefit share that started after 1982 is predicted well by the increase in the tax-price of employee benefits (decrease in marginal tax rates) that started after 1981. This increase in the tax-price of employee benefits is a clear result of successive revisions to the federal income tax during the 1980s that have cut the marginal tax rate on income.[8]

Other variables also play an important role in explaining changes in the employee benefit share, albeit a less important role than the changing tax-price of benefits. Consider, for example, real income changes. It is easy to see from Figure 1 that from 1977 through 1981, falling real income damped the growth of the employee benefit share. This suggests in turn that decreases in real income during the late-1970s contributed to the slowing growth of employee benefits during the late-1970s. The role of the demographic variables, the capital-labor ratio, and additional variables included in our model are not shown in Figure 1. Our findings suggest that these factors also play a role in explaining changes in the employee benefit share, but none plays as strong a role as either the tax-price or income variables.[9]

Our model, and simulations based on that model, suggest that changes in two variables--the tax-price of employee benefits and real income--explain most of the rapid growth of employee benefits up to the mid-1970s, the slowing growth that occurred between 1976 and 1981, and decline that has occurred since. The marginal tax rate on wages rose (and the tax-price of employee benefits) fell throughout the 1970s, favoring provision of employee benefits. But average real income peaked in 1972, showed little change through 1976, and then fell through 1981. It follows that changes in both the tax-price of employee benefits and real income favored employee benefit growth in the early 1970s. But during the late-1970s, only changes in the tax-price of employee benefits favored employee benefit growth, whereas the decline in real income damped that growth. In the 1980s, neither changes in the tax-price of employee benefits nor real income have favored employee benefits--the tax-price of employee benefits has risen with repeated cuts in marginal tax rates, and real income growth has been modest. Hence, the demand for ever more employee benefits has dampened, and the actual growth of the employee benefit share has ceased.

IV. A Framework for Evaluating Employee Benefits Policy

The discussion to this point leaves unanswered questions about what might be the appropriate role of government policy regarding employee benefits. This section sets out some possible criteria for evaluating public policy toward employee benefits, treating them under three broad headings: (a) static economic efficiency, (b) capital accumulation and economic growth, and (c) equity and income distribution. These three sets of criteria are considered in turn.

A. Static Economic Efficiency

Static economic efficiency--the allocation of resources to their most highly valued use--has been often used as an argument for taxing employer contributions to pensions and health insurance. Indeed, the favorable tax treatment of employer contributions to voluntary employee benefit plans has been under attack since at least 1973, when Martin Feldstein argued that the exclusion of health insurance contributions from taxable income distorts the incentive to demand health insurance and ultimately to use the health care system. Feldstein and those who have followed him have made two points. First, they argue that the tax-favored status of health insurance is responsible for the rising cost of medical care: "the tax laws give an incentive to purchase more health insurance, and...health insurance encourages consumers to purchase more medical care than they would in the absence health insurance" (Vogel 1980, p. 220). Second, they have argued that a tax subsidy for health insurance is inefficient--the government could provide the same amount of health care directly, finance the health care through lump-sum taxes, and have revenue left over that could be returned to taxpayers or used to buy other public goods or services.[10]

Mark Pauly (1986) has recently challenged those who advocate taxing health benefit contributions, arguing that the efficiency effects of removing the tax-favored status of health insurance are ambiguous. The ambiguity arises because the health care market is so imperfect. Even in the absence of tax-subsidies, the health care sector would never be perfectly competitive. Moreover, there are externalities associated with health care provision, and the market for health insurance is plagued by adverse selection. In such a case, the theory of second best suggests that removing a distortion may not be welfare improving.

In other words, it is important not to define any and all departures from a market-determined allocation of resources as inefficient. If the distribution of endowments or opportunities is considered undesirable, if externalities in the consumption of some good exist, or if market structure is imperfect, then the market mechanism may fail to achieve static efficiency.

Another factor that could offset the alleged inefficiency of giving employee benefits favorable tax treatment is the flexibility the current system provides employers in structuring benefit plans. This flexibility may be desirable if it leads to a more efficient allocation of the labor force (that is, to better matches between workers and firms), or to enhancement of on-the-job effort (that is, to less shirking). Deferred benefits, such as pensions, have been theorized to be an efficient mechanism for inducing worker attachment, commitment, and the accumulation of firm-specific human capital (Lazear 1981; Shapiro and Stiglitz 1984; Bell and Hart 1988.) Clearly, such considerations need to be evaluated and made part of any overall evaluation of employee-benefit policy.

B. Capital Accumulation and Economic Growth

Whether a policy contributes to or inhibits capital accumulation and long-run economic growth is a second consideration that requires evaluation. The criterion here is long-run efficiency, which cannot be captured by the notion of static efficiency discussed above.

In the context of employee benefits, questions of capital accumulation and economic growth bear mainly on policies that might influence pensions. Much controversy has surrounded the question of whether pensions result in net additions to saving, or alternatively merely replace saving that individuals would engage in on their own if they were not pension participants. Pensions would result in net additions to saving if pensions and private asset holdings were complements, which would be the case if pension eligibility led individuals to plan earlier and longer retirements than they otherwise would (the additional assets would be needed to finance a longer retirement). Alternatively, pensions would simply substitute for private asset holdings if pension eligibility had no impact on an individual's retirement behavior (the pension assets would be used in place of other assets to finance a retirement of predetermined duration).

Individual Retirement Accounts (IRAs) have sparked similar concerns about saving behavior: Do (or did) IRAs simply substitute for saving that individuals would have engaged in anyway, or do they result in net increases in saving and private asset holdings? The issues are important because if pensions or IRAs do generate net additional saving, and saving in turn generates funds that are available for lending and investment, then pensions and IRAs contribute to long-run growth.

Pozo and Woodbury (1986) have reviewed the evidence on whether pensions result in net additions to asset accumulation, and offer additional evidence using the 1983 Survey of Consumer Finances (SCF). We find widely divergent results among the existing studies of pensions and saving. These divergent results occur even among studies that use similar kinds of data (for example, aggregate data or household data). In our empirical work with the 1983 SCF, we find that estimates of the influence of pensions on private asset holdings are extremely sensitive to changes in specification of the estimating equation. In particular, an asset holding model that excludes current household earnings yields estimates suggesting that pensions and asset holdings are complements and that households with greater pension wealth save more. But an asset holding model that includes current household earnings yields the opposite result--that pensions and asset holdings are substitutes and that households with greater pension wealth save less. The fragility of these results suggests a need for improved data and estimating techniques in addressing questions about the influence of pensions on asset accumulation.

Similar controversy has surrounded the question of whether IRAs have induced increases or decreases in saving and asset accumulation. Here, however, the evidence seems to support the idea that much IRA saving has represented new saving (Venti and Wise 1987; Feenberg and Skinner 1989).

In short, there exists much research on how pensions and various pension policies influence saving and asset accumulation, but consensus has not yet emerged on the direction of all these influences. The development of data and estimating techniques to resolve convincingly questions surrounding pensions and saving, in particular, should be given high priority.

C. Equity and Income Distribution

1. Employee Benefit Coverage and Income Distribution. As discussed in section II above, employee benefits vary greatly across industries and individual workers. But how does the pattern of employee benefit coverage influence the distribution of income? This question has been considered by Smeeding (1983, especially Table 6.6 and 6.7), who finds that, as a whole, voluntary employer contributions to pensions and to health and life insurance tend to make the distribution of income more unequal: High-wage workers receive a larger share of their total compensation as deferred income and insurance than do low-wage workers. Smeeding's findings are supported by the findings of Taylor and Wilensky (1983) and Chollet (1984) on health benefits, and of Andrews (1985) and Kotlikoff and Smith (1983) on pensions. But Smeeding also shows that it is important to decompose nonwage compensation into health and life insurance, on the one hand, and pensions and other deferred compensation, on the other. The reason is that health and life insurance benefits are roughly proportionately distributed, whereas deferred compensation is highly regressively distributed. Specifically, Smeeding's findings indicate that insurance benefits increase from 3.7 percent of compensation for low-wage workers to 6.2 percent of compensation for a middle-wage group, but then decline to 2.9 percent for the highest-wage group. In contrast, deferred compensation is only 0.4 percent of the earnings of the lowest-wage group, but 7.2 percent of the compensation of the highest-wage group.

Legally required contributions, such as social security, unemployment insurance, and workers' compensation, differ markedly from voluntary contributions in their effect on income distribution. Legally required contributions tend to be distributed progressively, and hence bring about greater equality.

In sum, voluntarily provided employee benefits, unlike legally mandated contributions to social insurance, seem to have a disequalizing influence of income distribution. This naturally raises questions about the desirability of exempting these benefits from federal payroll and personal income taxes.

2. Other Equity Considerations. Employee benefits such as pensions and health insurance are intended to insure workers against income loss resulting from old age and sickness. It is this "merit good" aspect of employee benefits that has long been used to justify the favorable tax treatment that employer contributions to employee benefit plans receive.

However, if a larger proportion of the total compensation of high-earning workers is received as nonwage benefits, as appears to be the case, then the exemption of those benefits from payroll and personal income taxes is clearly a regressive aspect of the U.S. tax system. That is, exemption of nonwage benefits violates the vertical equity precept that those with greater ability to pay for government services should do so. This concern has been the subject of an extensive study by the Congressional Budget Office (1987), which advocates reducing the tax advantages now associated with pensions.

In addition, exemption of nonwage benefits creates situations where horizontal inequities can--and undoubtedly do--arise. Consider two workers, each with total compensation (wages plus contributions to health insurance, life insurance, and pensions) of $20,000. Suppose also that they are both single and declare one exemption and the zero-bracket amount. If Mutt receives $17,000 in wages, whereas Jeff receives $18,500 in wages, then Jeff pays more taxes and faces a higher marginal tax rate than Mutt. But this clearly violates the notion of horizontal equity--that households equally situated should be taxed equally.

The "pure solution" to this problem, as Munnell (1984) has called it, is to include all employer contributions for employee benefits in taxable gross income. (Increases in accrued vested pension contributions would also be included in gross income, since such increases constitute an increase in an individual's lifetime income.) The pure solution is attractive in principle because it would mitigate inequities in the tax system. It is also attractive in the sense that it would either raise federal revenues or permit federal marginal income and payroll tax rates to be lowered. For example, Munnell (1984, Table 2) estimates the revenue gain from such a comprehensive tax to be $64.3 billion. The practical difficulties of implementing this pure solution are minimal. Indeed, the problems that do exist pale beside the political opposition such a proposal would almost certainly meet. In view of the strong potential opposition to taxing employee benefit contributions, some workable alternative must be sought.

One alternative that has gained currency, and that has been introduced in a variety of guises in legislative proposals, is to limit the amount of the employer's contribution to both pensions and health insurance that is excluded from the worker's taxable gross income.

There have been numerous discussions of such proposals (Adamache and Sloan 1985; Chollet 1984; Halperin 1984; Katz and Mankiw 1985; Korczyk 1984; Steuerle and Hoffman 1979; Sullivan and Gibson 1983), and the 1986 Tax Reform did tighten limits on certain forms of retirement saving (Congressional Budget Office 1987). Limits on the tax advantages given to health insurance have only recently been imposed, although whether these limits will be effective remains unclear (see the discussion of Section 89 of the Internal Revenue Code in section VI below). It is alleged that limiting the tax-favored status of employee benefits would stem what many observers believe to be an inefficient and excessive use of the health care system. Hence, in addition to raising considerable revenues, some believe that a "tax-cap" on health benefit contributions would help correct a distortion of the price system that has led to an inflated health care sector.

The effects of these proposed policies are considered in the following section.

V. Effects of Changing Tax Policy on Employee Benefits

Woodbury and Huang (1989) have simulated the effects on compensation of three alternative changes in tax policy: (a) the 1986 tax reform; (b) treating employer contributions to health insurance as taxable income (both a policy of taxing all health-insurance contributions, and a policy of taxing only contributions over $1,125 annually); and (c) treating all employer contributions to both pensions and health insurance as taxable income. These simulations are based on a three-equation model of the provision of wages, pensions, and health insurance.

A. Effects of Policy Changes on Compensation

Tables 8 and 9 summarize the effects of the policy changes on compensation. Table 8 shows how each of the four simulated policy changes would have altered compensation quantities (that is, real expenditures), nominal expenditures, and shares _if they had been in effect during 1969 through 1982_. All effects are shown in percentage terms, averaged over the 1969-1982 period. Panel A shows the total effects of the policy changes--that is, the sum of the substitution, ordinary income, and extra income effects. Panel B isolates the substitution effects of each policy change--that is, the effect of each policy if only the change in tax-price implied by each were to occur (and if money total compensation and all other determining variables were held constant).

In contrast, Table 9 shows estimates of how each policy change would affect compensation quantities, nominal expenditures, and shares _if enacted today under the existing tax system_. (Note that the 1986 tax reform is not shown in Table 9 because comparison of each policy change is with respect to the tax system implied by the 1986 reform.) Again, all changes are shown in percentage terms, and Panel A shows the total effects of each policy change, whereas Panel B shows the substitution effects.

1. _Effects of the 1986 Tax Reform_. The simulations suggest the following effects of the 1986 tax reform (see Table 8). First, and most

important, the tax reform can be expected to lead to significant increases in the quantity, nominal expenditure, and share of compensation taken as health insurance. This increase in health insurance occurs in spite of the reduced incentive to receive compensation as health insurance that results from lower marginal tax rates on wages (that is, in spite of a negative substitution effect). The increase in health insurance is attributable to the large income effects of the tax reform.

Second, the tax reform can be expected to significantly increase the quantity of compensation received as wages. The increase in wage quantities is expected in light of the reduced tax-price of wages implied by lower marginal tax rates. (Note that the share of compensation received as wages will be little affected by the tax reform due to the relatively larger increase in health insurance compensation).

Third, the 1986 tax reform will shift the mix of compensation away from pensions and toward health insurance.

The basic predictions from the simulations are that the reform will (a) increase the quantity, nominal expenditure, and share of compensation taken as health insurance, and (b) shift the mix of compensation away from pensions and toward health insurance. These predictions can be explained by noting two points. First, the demand for health insurance contributions is very inelastic, or unresponsive to changes in tax-prices. Hence, raising the tax-price of health insurance will increase the share of compensation demanded as health insurance. Second, workers are very willing to substitute back and forth between pensions and wages. That is, the demand for pensions is highly elastic, or responsive to changes in tax-prices. It follows that raising the tax-price of pensions will reduce the share of compensation demanded as pension compensation.

The results of simulating the 1986 tax reform are troubling because they suggest that it will be difficult to bring down health insurance expenditures or the health insurance share of compensation. Indeed, because the 1986 tax reform has such large income effects, it will increase the demand for health insurance even though it has reduced the tax-price incentives to demand health insurance. Some of this increase may already be reflected in large increases in health-insurance premiums that were reported for 1989 and are being reported for 1990.

2. Effects of Taxing Health Insurance Contributions. The simulations suggest that treating all health insurance contributions as taxable income would have a strong effect on the provision of health insurance by employers. Taxing health insurance during the 1969-1982 period would have reduced the quantity of employer-provided health insurance by over 22 percent (Table 8), and taxing health insurance under the current system could be expected to reduce the quantity of employer-provided health insurance by nearly 15 percent.

Similarly, taxing health-insurance contributions in excess of $1,125 annually (in 1982 dollars) would substantially reduce the quantity of employer-provided health insurance. Such a policy during the 1969-1982 period would have reduced the quantity of health insurance by nearly 14 percent (Table 8), and doing so under the current tax system would reduce the quantity of health insurance by nearly 9 percent (Table 9).

An apparent side effect of taxing health insurance contributions would be a reduction in the quantities of wages and pension provided by employers. These decreases result because taxing health insurance would reduce real incomes, which would lead in turn to reductions in both wages and pensions. Although neither reduction would be enormous, the decrease in pension provision should be considered in any public discussion of the merits of taxing health insurance, and ways of offsetting the decrease might be considered if it were viewed as undesirable.

3. Effects of Taxing All Employee-Benefit Contributions. Our simulations imply that treating all employer contributions to pensions and health insurance as taxable income would dramatically reduce the provision of both pensions and health insurance. Indeed, taxing all employee benefits would have cut pension provision by 64 percent during the 1969-1982 period, and would cut pensions nearly in half under the current tax system. Health insurance would have been reduced by nearly 28 percent during the 1969-1982 period, and would be reduced by 20 percent under the current system. These results suggest that reforming the tax system to include employer contributions as taxable income would be politically difficult, and could create strong pressure to increase Social Security benefits to compensate for the decline in private pensions.

Wage quantities would also fall (but far less than pensions or health insurance) if all employee benefits were taxed. This small decrease results because taxing all employee benefits would reduce real disposable incomes, which would lead in turn to reduced wage quantities.

Another effect of taxing all employee benefits would be a major shift in the mix of compensation away from pensions and health insurance and toward wages. The share of compensation received as pensions would be most affected--our simulations suggest a decrease in the pensions share of nearly 40 percent.

Pensions would be reduced by half if all employee benefits were taxed, but health insurance would be cut by only 20 percent, for a simple reason: Pensions and wages are far better substitutes than are health insurance and wages. It follows that when pensions are taxed, workers are readily willing to substitute wages for pensions, but less willing to substitute wages for health insurance.

B. Distributional Effects of the Policy Changes

The distributional effects of the tax-policy changes can be seen in two ways. Table 10 shows the effect of each policy change on the tax bill of the average worker in low-wage, medium-wage, and high-wage industries. Table 11 disaggregates the total effects of each policy change on compensation quantities into effects on workers in low-wage, medium-wage, and high-wage industries.

The simulations suggest that the effects of the 1986 tax reform are roughly proportional: Both the revenue effects and the effects of the reform on compensation appear to be similar across industries.

Similarly, the distributional effects of taxing all health insurance contributions are not dramatic. Workers in low-wage industries would experience somewhat smaller decreases in wages and health insurance than workers in high-wage industries. Also, workers in high-wage industries would experience somewhat larger increases in their income tax bills. But the differences among the three groups of workers are not great.

In contrast, the distributional effects of taxing health insurance contributions over $1,125 are significant. Under the low tax cap, workers in high-wage industries would experience a 28 percent decrease in health insurance, whereas workers in low- and medium-wage industries would experience a decrease of only 11 to 13 percent. Also, the income taxes of workers in high-wage industries would rise by over 4 percent, whereas the income taxes of other workers would rise by less than 1 percent. We conclude that a low tax cap on health insurance has distributional effects that would increase income equality.

Similarly, the simulations suggest that taxing all health insurance contributions would tend to increase income equality. Workers in low-wage industries would experience income tax increases of 14 to 15 percent, whereas workers in high-wage industries would experience tax increases of nearly 26 percent.

VI. Further Issues in Pensions and Health Insurance

The discussion of public policy as it bears on employee benefits has to this point focused on the tax treatment of pensions and health insurance. In this section, we turn to a variety of additional issues that are specific to pensions and health insurance, and that are of increasing concern to workers, employers, and the public generally: the regulation of pensions and its impacts; the problem of health-care cost containment; the problems posed by health insurance plans that extend to retired employees; and the regulation of health insurance plans under Section 89 of the Internal Revenue Code.

A. Pension Regulation and the Restructuring of Pension Plans

Congress appears to have had two purposes in legislating the Employee Retirement Income Security Act of 1974--ERISA. The first was to improve the information available to employees about their pensions "by requiring the disclosure and reporting...of financial and other information" about retirement plans (Public Law 93-406, 88 Stat., September 2, 1974).

The second purpose of ERISA was to improve the "equitable character and soundness" of existing and future retirement benefit plans "by requiring them to vest the accrued benefits of employees with significant service, to meet minimum standards of funding, and by requiring plan termination insurance." In other words, the second goal was to provide better benefits for more workers, and to guarantee that anticipated benefits would in fact be received.

To bring about these ends ERISA established standards that must be met in order for a defined-benefit pension plan to qualify for favorable tax treatment. These standards pertain to participation, vesting, reporting and disclosure, and funding. Because compliance with these ERISA standards is costly to employers, there was discussion from the start that ERISA might lead to termination of pension plans. This would, of course, frustrate achievement of broader coverage and imply the perverse effect of reduced coverage and lowered benefits for some workers (Ture 1976; Stein 1980).

It was quickly noted by others, however, that plan termination was not the only option available to employers who faced increased costs of defined-benefit pension plans as a result of ERISA. Although termination is surely an option, employers could also convert (partly or wholly) from a defined-benefit to a defined-contribution plan, thereby avoiding the insurance, reporting, and disclosure costs of maintaining a plan covered by ERISA (Denzau and Hardin 1983). Indeed, the movement from defined-benefit to defined-contribution plans--the so-called restructuring of pensions plans--has received increasing attention from pension practioners (see below).

From a social standpoint, it seems clear that the key variables of interest are the contributions made by employers to pension plans (whether defined-benefit or defined-contribution) and the benefits received by retirees. Plan restructuring should ultimately be reflected in these outcomes. Taking this view, it is fairly straightforward to show that the impact of ERISA on all employer contributions to pension plans is ambiguous in theory--ERISA's impact may be either positive or negative (Woodbury 1984). Accordingly, the impact of ERISA is really an empirical issue that must be settled by analysis of available data.

It is somewhat disturbing that there has been very little empirical research on the effects of ERISA--that is, little work that attempts to isolate the impact of ERISA apart from the many other forces that act to alter the employer-provision of pensions. Moreover, the research that does exist is highly mixed--some of it suggests that ERISA's impact on pension contributions have been negative, others suggest small to nonexistent impacts, and still others suggest a positive impact of ERISA.

For example, an early study by Long and Scott (1982) suggested no effect of ERISA on pension contributions. But a later study (Woodbury 1984) found that ERISA may have been responsible for as much as a one-percentage-point increase in the share of compensation received as pensions in the years immediately following its enactment. This would translate into a nearly 25 percent increase in pension contributions as a result of ERISA. Yet another study (Sloan and Adamache 1986) concluded that ERISA significantly reduced the growth of pension contributions in the years following its enactment. It seems clear that high priority should be given to establishing more convincing evidence about whether and how ERISA has affected total employer contributions to pensions.

At least two other studies have examined the impact of ERISA on other outcomes. Cornwell, Dorsey, and Mehrzad (1989) find that ERISA has had no discernable effect on involuntary separations from firms--that is, firms are no more or less likely than before ERISA to renege on their promises to pay pension benefits by terminating workers. Ippolito (1988) presents evidence that ERISA has had virtually none of the effects that might be expected on wages or employment, and failed to induce underfunded plans to increase their funding levels. But he also finds that ERISA has slightly increased the rate of defined-benefit plan terminations, and has increased the likelihood that newly-created pensions plans would be defined-contribution plans.

Recently, much attention has been focused on the "restructuring" of pension plans--that is, on the movement away from defined-benefit and toward defined-contribution plans (Employee Benefits Research Institute 1989b). In recent years, restructuring has permitted many firms to recover the assets of defined-benefit pension plans that were actuarially overfunded, as well as to avoid the costs of compliance with ERISA by moving to a defined-contribution plan. Hence, corporate financial considerations (such as the availability of funds for investment and the attractiveness of a company as a takeover target) have come to dominate decisions about pension plan restructuring. It is clear, then, that competing interests have increasingly come into play regarding decisions about how to structure pensions. From the point of view of workers, the contributions made by employers to pension plans (whether defined-benefit or defined-contribution) and the benefits they receive in retirement are of paramount interest. But companies have other goals that may conflict with workers' interests. Policies that effectively balance these competing interests are difficult to make, given the paucity of knowledge about the impacts of current policy and of restructuring itself. Again, research on how current policy and restructuring activities have affected pension contributions and expected pension benefits is much needed.

B. Health-Care Cost Containment

Between 1982 and 1987, the cost of health insurance grew by 71 percent--more rapidly than any other component of consumption. During the same period, the cost of medical care generally increased by 35.6

percent, and the cost of all personal consumption items taken together grew by only 20.4 percent (U.S. Department of Commerce 1988, Table 7.10).

A complete discussion of the reasons for the rapid increase in the cost of health care generally--and of health insurance in particular--is well beyond the scope of this paper. Most observers attribute the increases to a constellation of factors acting simultaneously. On the supply side, they point to increasingly sophisticated technology and a market structure that is highly imperfect and lacking in competition. On the demand side, they point to infusions of funds from public sources--mainly Medicare in recent years--as well as private sources. With respect to the increasing cost of health insurance in particular, they have pointed to health providers' practice of shifting costs to private health-insurance carriers as Medicare and Medicaid reimbursements have become less generous. In effect, hospitals have covered the cost of providing health care to uninsured and underinsured patients by charging higher rates to patients who are covered by private health insurance.

Employers have tried to stem the inflation of health-insurance premiums in several ways (see, for example, Employee Benefits Research Institute 1989a). First, they have shifted the cost of health insurance and health care to their employees by various means: requiring workers to contribute to the monthly premiums paid by the employer, initiating or increasing the deductible paid by the worker before the insurance pays, or initiating or increasing the copayment (payment by the worker) for each service received. Second, employers have made increasing use of so-called utilization review, under which the appropriateness of treatment is reviewed before treatment is administered. Utilization review includes precertification for length of stay in the hospital and second opinions before performance of surgery. Third, they have moved away from traditional fee-for-service health insurance and toward Health Maintenance Organizations (HMOs) and Preferred Provider Organizations (PPOs). Under HMOs, payments to health-care providers are based on a diagnosis or on a fixed package of services. Under PPOs, fee schedules are negotiated with a limited group of health-care providers, and utilization reviews occur in order to manage the cost of health-care provision.

There appears to be little research on how well the various strategies of health-care cost containment have worked, although the obvious judgement based on the recent record of dramatic increases in health-insurance premiums and health-care costs must be negative. As a result, it is not surprising that at least two of the country's largest employers--Ford Motor and Chrysler Corporation--have called for national health care financed by the federal government. Neither is it surprising that in discussions of health-care policy within the State of Michigan, the big three auto manufacturers have favored adoption by the State of policies that would remove the burden of paying for apparently ever-increasing health insurance costs, such as a comprehensive state-financed health insurance plan.

Charitably, one might say that health-care policy in the U.S. is currently in a state of flux. More realistically, one might say it is in turmoil. How or whether the debate will resolve itself seems a matter of speculation. In two other sections of this paper, I argue that taxing employer contributions to health insurance as taxable income to workers would be a sensible approach to improvement of the health care system. It would be unrealistic to suppose that taxing health insurance would solve all the current problems facing the health-care sector--it would not address the problem of uninsured individuals or the apparently resulting problem of health-care providers shifting costs to privately insured patients. But in the context of a discussion of employee benefits, it would seem to be the appropriate suggestion. Other possible strategies, such as a system of comprehensive national health care, go well beyond the bounds of this discussion.

C. Health Insurance Benefits for Retirees

In addition to facing an ever-rising cost of health insurance for current employees, employers who extend health insurance to their retired workers face the problem of financing health insurance for those retirees. U.S. Department of Labor statistics indicate that over three-quarters of full-time workers who are covered by the health insurance plans of medium and large firms (private sector) have health insurance coverage after retirement (U.S. Department of Labor 1987, Table 29).

In general, employer-provided health insurance benefits for retired workers are the same as for current workers, although health insurance plans for retirees are usually integrated with Medicare. Integration with Medicare reduces the cost to employers of providing health insurance to retirees, but the existence of retiree health insurance in the context of rising health insurance costs poses a potentially serious problem for firms nevertheless. Specifically, retiree health benefits have been financed by companies on a pay-as-you-go basis, which suggests that as the population ages, their existence will impose an increasing burden. A recent Employee Benefits Research Institute report estimates that the total unfunded liability of private employers for the future health insurance benefits of their workers (both current and retired) is $68.2 billion (Employee Benefits Research Institute 1988a, Table 12). The Financial Accounting Standards Board has drafted rules under which companies would be required to treat the cost of health insurance promised to retirees (that is, the present value of the health-insurance costs that workers will incur in retirement) as a liability in their balance sheets. It is expected that these rules will be finalized in 1990 (Employee Benefits Research Institute 1988a).

D. Regulation of Health Insurance: Section 89 and State Laws

An initially little-known part of the 1986 Tax Reform Act was Section 89 of the Internal Revenue Code. The purpose of Section 89 was to ensure that employee-benefit plans that receive tax-favored treatment--in particular health and life insurance--would not favor highly paid employees either in their coverage or generosity. Section 89 attempts to achieve this goal of nondiscrimination by setting out criteria that a benefit plan must meet in order to qualify for favorable tax treatment (see Employee Benefits Research Institute 1989c, pp. 16-17, for a synopsis). If a plan fails to meet these criteria, then the dollar value of benefits provided to workers under the plan is treated as taxable income to the worker.

Although few question the intent of Section 89, both labor and business have attacked Section 89 as originally adopted. Labor's fear is that Section 89 is a first step toward taxing all employee benefits. Business's objections center on the costs associated with demonstrating compliance--according to many employers, the original Section 89 placed unreasonable record-keeping and data-collection burdens (Stout 1989; LaForce 1989). Indeed, at the time of writing, the Treasury Department has agreed, and the House Ways and Means Committee has moved to ease Section 89 so that criteria for compliance focus on whether a plan is designed to be nondiscriminatory, rather than on whether a plan as used is nondiscriminatory (Birnbaum 1989).

The effective date for Section 89, initially January 1, 1989, was delayed to July 1, 1989 even before the proposed easing of the rules. It now appears that a revised Section 89 will become effective October 1, 1989. What the actual effect of the modified Section 89 will be is an important but difficult topic for future research--difficult because accurate data on plan characteristics and availability are so scarce.

In addition to Section 89, many employers have faced an increasing number of state laws that mandate the provision of particular types of health insurance benefits (Stipp 1988). Further, both Hawaii and Massachusetts have both adopted legislation that effectively mandates the provision of a relatively comprehensive package of health insurance benefits to most workers (Goddeeris 1989). Readers are referred to one of the other Commission reports (Mitchell 1989) for a full treatment of mandated benefits.

VII. Flexible Benefit Plans and New Employee Benefits

A. Flexible Benefit Plans

Traditionally, employers have offered all workers within a given classification a fixed package of benefits. Often these benefits have consisted of a certain number of paid holiday, vacation, and leave days, a pension plan, health insurance, and life insurance. Flexible benefit plans--often called "cafeteria" plans--differ from this traditional arrangement in that they allow workers to select from a menu of possible benefits those benefits that they most prefer (Employee Benefits Research Institute 1985, Chapter 28).

Two advantages have been attributed to flexible benefit plans. First, they may increase the value to some workers of the benefits that are provided by the employer in tax-favored form. Second, they may induce workers to become more aware of, and to gain a better understanding of, the benefits they receive.

To a researcher, perhaps the most striking aspect of flexible benefit plans is that they have been so frequently mentioned in the press and in practical discussions of employee benefits, but that there exists virtually no substantive research or analysis of their use or effects. There can be little doubt that lack of data on flexible benefit plans is an important reason for this gap in research on employee benefits.

Despite the lack of existing research, two points about flexible benefit plans can be made. First, it has been noted frequently that the existence of flexible benefit plans may lead to adverse selection--that is, to workers who are good risks (from the point of view of health insurance or life insurance, for example) opting out of a plan, leaving only bad risks. Models of adverse selection suggest that when good risks opt out of an insurance market, insurance premiums increase and ultimately the insurance market in question fails. The only way to mitigate adverse selection in the context of flexible benefit plans is to limit flexibility, for example, by placing insurance plans outside the basket of benefits among which workers may choose. But this thwarts the basic idea of the flexible benefit plan.

The second point has to do with flexible benefits in the context of public policy. A central problem in the concept of flexible benefit plans is that flexible benefits thwart the ability of policy makers to encourage provision and use of particular benefits. Instead, by designating a broad array of benefits as tax-favored, flexible benefit plans encourage provision and use of a rather arbitrary package of benefits. In short, the flexibility inherent in flexible benefit plans robs policy makers of the ability to direct resources toward particular benefits, directing them instead toward a grab-bag of activities and benefits.

There is likely to be disagreement about whether these two disadvantages of flexible plans outweigh their advantages. But to the extent that flexible benefit plans undermine the basic insurance principles of certain employee benefits, and erode the ability of public policy makers to achieve desired goals, they would seem to be a deleterious innovation in employee benefits.

B. Dependent Care

The dramatic influx of women--and especially married women--into the labor force since World War II has led to increasing attention being given to "the interaction of work and the family" (Norwood 1988). In particular, the availability of child care (or more generally dependent care) has been an increasing concern in a labor market in which women with young children make up a substantial proportion of all workers.

At least four other Commission papers are devoted to one or another aspect of dependent care (Friedman 1989a, 1989b; Staines 1989; Rodgers and Rodgers 1989). Accordingly, it is necessary here only to point to some of the issues that are of special concern in the context of employee benefits. For example, Norwood (1988) has discussed the problems that the provision or child care and other nontraditional benefits raise for the measurement of total compensation. Hayghe (1988) reports the results of a recent Bureau of Labor Statistics special survey, which shows that only about 5 percent of all establishments with 10 or more employees provide direct child care benefits (that is, day care or financial assistance). Moreover, "only 2 percent of the 442,000 establishments that reported no child care benefits or flexible work-schedule policies said they were 'considering' doing something in the future" (Hayghe 1988, pp. 42-43). Finally, Robins (1988) provides a survey of the existing federal programs that support or encourage child care.

VIII. Implications for Public Policy

A multitude of public policy issues currently surround the tax treatment of employee benefits. In particular, the tax-favored status of employer contributions to pensions and health insurance has been blamed for numerous ills: a shrinking tax base that has exacerbated the federal budget deficit; an inefficient and bloated health-care sector, overinsurance by many recipients of employer-provided health insurance, and rising health-care costs; and a tax system that is made more regressive because those who receive tax-favored employee benefits tend to be in higher-income households than those who do not.

In addition to being held responsible for these perceived ills, the tax-favored status of employee benefits is implicitly blamed for failing to solve completely the problems one would expect it to address. Why do many workers still lack coverage by private pension or health insurance plans? Why, if tax-favored treatment of pension contributions is responsible for the growth of private pensions, is the rate of private saving in the U.S. nevertheless so low by international standards?

A. Some Options

Policies suggested to deal with these perceived problems have often addressed one problem without handling another. Two such proposals are taxing all employer contributions to pensions and health insurance, and requiring employers to provide some minimum level of health insurance to all employees--mandated health benefits. We discuss each in turn.

1. Taxing All Employee Benefit Contributions. The simulations suggest that the taxation of all employee benefits is too sweeping a policy change to implement in the foreseeable future--taxing all employer contributions would cut in half employer contributions to private pension plans. Perhaps the simplest implication of this finding is that a policy of taxing all employee benefits would be politically difficult to implement.

Even if it were not a politically difficult option, the simulations suggest that taxing all benefits would dramatically reduce retirement saving through the private pension system, and it is unclear that this would be desirable. First, the U.S. economy has a low rate of private saving by international standards, and a policy that would further reduce private saving would be counter to the goal of long-run economic growth. Second, taxing all benefits would, by cutting in half the size of private pension contributions, place on the public retirement system an increased long-run burden. If policy-makers wish to tax pension contributions, they must in turn be willing either to increase the size of the OASI system, or to see the income replacement rates of retirees fall substantially. Neither of these alternative seems desirable or easy to defend.

In short, because its effects of the private pension system appear to be so dramatic, the policy of taxing all employee benefits seems both politically infeasible and economically unwise.

2. Mandated Benefits. The idea of mandating health benefits has recently caught the attention of the public and many policy makers. A full treatment of mandated health benefits is beyond the scope of this

discussion, in view of the Commission report by Mitchell (1989) on this topic. Nevertheless, three points may be appropriate. First, discussions of mandated benefits often seem to imply that mandating would do away with the problem of uninsured individuals, when of course mandating would only do away with the problem of uninsured workers. In other words, some advocates of mandated health insurance have not clearly specified the nature of problem posed by the uninsured. Neither have they clearly delineated who would and who would not benefit from mandated benefits. It follows that the degree to which mandating would be an efficient way of solving the social problem posed by uninsured individuals is largely an unanswered question.

Second, the effects of mandated benefits on labor markets, especially low-wage labor markets, have yet to be examined in any systematic way. It seems likely that mandated benefits could have the same adverse effects on employment of low-wage workers as a large increase in the minimum wage, but the needed research on this question does not exist. Third, mandating health-care benefits could contribute to further increases in health-care costs, and further inefficient use of the health-care system. The reason is that, to the extent mandating is successful in extending health insurance to currently uninsured workers and households, it would increase use of the health-care system. In part, such an increase would be desirable, but (depending on the package of benefits mandated) it is also possible that further overuse of health services would result.

The case for mandating health-insurance benefits seems far from clear-cut at this time. Too little research, either theoretical or empirical, has been conducted to offer a well-reasoned judgement. What is clear is that mandating benefits, like the favorable tax treatment of health insurance contributions, may create its own set of problems without providing a complete solution to the problems it is intended to address.

B. A Proposal for Marginal Change

A relatively low cap on health-insurance contributions appears to be a sensible and efficiency-improving policy. A policy of taxing employer contributions to health insurance in excess of a relatively low amount ($1,125 annually, for example, as discussed above) has at least five points in its favor.

First, it partially addresses the problems of rising health-care costs, overuse of the health-care system, and an inefficiently large health-care sector. It does so by reducing the incentive for employers to provide compensation in the form of health insurance beyond a given level. As a result, the health insurance provided by employers would be more likely to be true insurance against large and unexpected health expenses, and less likely to be a simple tax subsidy to consumption of health-care services that are regular and predictable.

Second, a low tax cap on health insurance addresses the concern that the tax base will continue to be eroded as health-care costs rise, and as employer contributions to health insurance increase. Many predictions suggest that employer contributions to health insurance will continue to rise in real terms. By limiting the extent to which employer contributions to health insurance are excluded from the tax base, erosion of the tax base is halted.

Third, a low tax cap on health insurance would not limit or reduce the access to basic health care by any currently insured or potentially insurable worker. It would likely reduce the degree to which workers who are currently overinsured consume health-care services. That is, it would tend to reduce the provision by employers of insurance that covers regular and predictable health care (Phelps 1984-85). But again, the low tax cap would be unlikely to reduce workers' coverage by employer-provided major medical insurance.

Fourth, in reducing the provision of health insurance for regular and predictable health care, the low tax cap would imply an improvement in the equity of the tax system. The simulations discussed above suggest strongly that a low tax cap on health-insurance contributions would have a favorable distributional impact. Because workers who have the highest total compensation tend to be covered by the most generous employer-provided health insurance, taxing health contributions over a specified maximum would be a progressive tax measure.

Fifth, a low tax cap on health insurance contributions would not foreclose the option of mandating health insurance benefits, should policy-makers choose to pursue mandating. If all health insurance contributions were taxed, it would be extremely awkward to mandate health-insurance coverage because the two policies would tend to work at cross purposes. Taxing benefits above the mandated level would not pose this problem, however. Essentially, a policy of mandating with taxation of benefits over a specified level could be viewed as a statement of what level of health-insurance benefits is in the public interest. But again, the case for mandating health insurance is not clear-cut at present.

In short, a low tax cap on health insurance contributions would tend to alleviate each of the perceived problems outlined above without exacerbating other problems or foreclosing other policy options. Accordingly, the low tax cap seems a sensible and economically sound policy, the adoption of which should be urged.

Table 1

Non-Wage Labor Costs (NWLCs) as a Proportion of Total Labor Costs by Type of Cost, U.S. Private Domestic Industries 1965-1985

	National Income & Product Accounts		Chamber of Commerce	
Type of NWLC	1966	1985	1965	1985
(a) Payments for time not worked	a	a	0.0762	0.0842
(b) Total social welfare costs	0.0961	0.1600	0.1026	0.1697
(c) Statutory social welfare costs	0.0493	0.0780	0.0448	0.0786
(d) Voluntary social welfare costs	0.0468	0.0820	0.0578	0.0911
(e) Benefits in-kind	a	a	0.0040	0.0015
(f) Other expenses of a social nature	a	a	0.0145	0.0163
(g) Vocational Training	a	a	0.0008	0.0021
(h) Total NWLCs	0.0961	0.1600	0.1981	0.2738

Sources: U.S. Department of Commerce, Bureau of Economic Analysis, *The National Income and Product Accounts of the United State, 1929-82: Statistical Tables* (Washington, D.C.: USGPO, 1986); *Survey of Current Business* 66(July 1986); U.S. Chamber of Commerce, *Employee Benefits*, various years.

a. The U.S. National Income and Product Accounts do not report the following as separate cost items: payments for time not worked, in-kind benefits, other expenses of a social nature, and vocational training. Payments for time not worked and benefits in-kind are included as direct wage and salary payments. Other expenses of a social nature and vocational training appear to have no counterpart in the Accounts.

TABLE 2

Total Compensation in Current Dollars and the Distribution of Compensation by Type, 1968-1986

Year	Total Compensation (current dollars)	Percentage of Total Compensation Paid as:			Average Annual Rate of Change in Percentage Paid as:		
		Wages and Salaries	Legally Required Nonwages	Voluntary Nonwages	Wages and Salaries	Legally Required Nonwages	Voluntary Nonwages
1968	416,430	90.1	5.0	4.9	-0.60 percent	3.1 percent	5.9 percent
1969	459,252	89.9	5.1	5.1			
1970	485,346	89.5	5.0	5.5			
1971	514,323	89.0	5.1	5.9			
1972	567,862	88.2	5.5	6.3			
1973	640,287	87.5	6.2	6.4			
1974	702,731	87.1	6.3	6.6			
1975	738,842	86.4	6.2	7.3	-0.44 percent	2.5 percent	3.1 percent
1976	829,984	85.6	6.5	7.8			
1977	930,471	85.1	6.7	8.2			
1978	1,060,682	84.8	6.9	8.2			
1979	1,200,078	84.7	7.1	8.2			
1980	1,315,139	84.5	7.0	8.5	-0.02 percent	1.6 percent	-1.2 percent
1981	1,451,580	84.5	7.2	8.3			
1982	1,521,944	84.1	7.2	8.7			
1983	1,609,958	84.0	7.4	8.6			
1984	1,775,291	84.1	7.7	8.2			
1985	1,899,965	84.3	7.7	7.9			
1986	2,006,269	84.4	7.7	7.9			

Notes: All data are derived from the National Income and Product Accounts: U.S. Department of Commerce, Bureau of Economic Analysis, *The National Income and Product Accounts of the United States, 1929-82*, Washington, D.C., U.S.G.P.O., September 1986; *Survey of Current Business* 67 (July 1987), and unpublished two-digit industry detail underlying the published figures. The unpublished data were provided by the Bureau of Economic Analysis. Table references below are to the published sources.

Total Compensation is total expenditure of private domestic industries on employee compensation, excluding directors' fees. (Table 6.4B of the published data include directors' fees in Total Compensation.) Wages and Salaries are from Table 6.5B. Legally Required Nonwages are the sum of Employer Contributions for Social Insurance (Table 6.12) and privately administered Workers' Compensation (Table 6.13). Hence, Legally Required Nonwages include all private domestic contributions for Old Age, Survivors, Disability, and Hospital Insurance, Unemployment Insurance, Workers' Compensation, and Temporary Disability Insurance. Voluntary Nonwages are Other Labor Income (Table 6.13) less privately administered Workers' Compensation and directors' fees (Table 6.13). Hence, Voluntary Nonwages include all private domestic contributions for pensions, profit sharing, group health and life insurance, and supplemental unemployment benefits.

Because Table 6.13 does not report Other Labor Income by type for private domestic industries, we have used unpublished data provided by the Bureau of Economic Analysis to compute Workers' Compensation contributions and directors' fees for domestic private industries.

Table 3

Non-Wage Labor Costs as a Proportion of Total Labor Costs by Industry, 1966, 1971, 1976, 1981, and 1985: U.S. National Income and Product Accounts Data

Industry	1966	1971	1976	1981	1985
All Private domestic	0.0961	0.1113	0.1444	0.1563	0.1600
Agriculture	0.0602	0.0744	0.1027	0.1338	0.1321
Mining	0.1229	0.1345	0.1618	0.1674	0.1713
Construction	0.0817	0.0907	0.1364	0.1590	0.1787
Manufacturing:					
Durable	0.1150	0.1391	0.1768	0.1890	0.1887
Nondurable	0.1092	0.1222	0.1577	0.1822	0.1830
Transportation	0.1016	0.1170	0.1644	0.1654	0.1862
Communications	0.1566	0.2064	0.2176	0.2214	0.2227
Utilities	0.1320	0.1500	0.2100	0.1998	0.2034
Trade:					
Wholesale	0.0763	0.0924	0.1176	0.1280	0.1359
Retail	0.0755	0.0872	0.1107	0.1231	0.1337
Finance and Insurance	0.1100	0.1240	0.1647	0.1593	0.1587
Services	0.0639	0.0775	0.1051	0.1205	0.1275

Table 4

Estimates of Fixed and Variable Labor Costs in the U.S by Industry, 1966, 1971, 1976, 1981, and 1985: U.S. National Income and Product Accounts Data

Industry	1966	1971	1976	1981	1985
Fixed Employee Benefits as percent of total labor cost:					
All Private domestic	6.01	6.54	8.90	9.28	9.59
Agriculture	2.99	2.88	4.96	5.47	5.57
Mining	8.82	8.97	11.35	10.99	10.96
Construction	3.94	3.84	7.40	8.63	10.28
Manufacturing:					
Durable	7.90	9.25	12.02	12.42	12.26
Nondurable	7.22	7.28	9.97	11.58	11.68
Transportation	5.22	6.16	9.22	8.66	9.89
Communications	12.53	17.03	17.21	16.93	16.73
Utilities	10.23	11.58	16.41	14.49	14.61
Trade:					
Wholesale	3.88	4.93	6.44	6.71	7.66
Retail	4.16	3.89	5.07	5.61	6.70
Finance and Insurance	8.14	8.84	12.29	10.99	10.80
Services	3.32	3.85	5.77	6.46	6.97

Table 5

Fixed/Variable Labor Cost Ratios and Skill Levels in the U.S. by Industry, 1985: U.S. National Income and Product Accounts Data

Industry	Fixed/Variable Cost Ratio	Rank	Skill Proxy	Rank
All private domestic	0.1061	--	3.82	--
Agriculture	0.0590	12	2.57	9
Mining	0.1231	5	12.09	3
Construction	0.1146	7	1.63	10
Manufacturing:				
Durable	0.1397	3	5.84	5
Nondurable	0.1317	4	8.58	4
Transportation	0.1097	8	5.82	8
Communications	0.2009	1	21.05	2
Utilities	0.1712	2	23.01	1
Trade:				
Wholesale	0.0830	9	2.63	8
Retail	0.0719	11	1.43	11
Finance and Insurance	0.1211	6	3.74	7
Services	0.0749	10	1.19	12

Notes: The skill proxy is constructed from national Income and Product Accounts data by dividing real capital consumption allowance by full-time equivalent employment. The Spearman rank correlation coefficient between the fixed/variable cost ratio and the skill proxy is 0.88.

Table 6

Inclusion of Workers in Employer-Provided Pension and Group Health Insurance Plans: Tabulations from the March 1988 Current Population Survey

Worker Characteristics	Percentage Included in Pension Plans	Percentage Included in Group Health Plan		Percentage Included in Both Pension and Health Plan
		Total	Employer Paid All	
All workers	42.9	59.9	24.1	37.5
Gender:				
Male	46.0	66.0	26.7	42.2
Female	39.3	52.5	20.9	31.9
Age:				
18-24	17.3	38.3	14.1	14.2
25-34	41.6	63.8	26.1	36.8
35-64	51.7	64.5	26.0	45.2
65 and over	22.5	40.3	17.4	18.0
Ethnicity:				
White Nonhispanic	43.9	61.0	25.4	38.5
Hispanic	31.9	49.6	17.6	27.2
Black	44.8	60.0	18.6	39.1
Other	44.0	58.0	22.6	36.3
Education:				
0-8 years	26.4	41.6	14.6	22.7
9-12 years	39.1	56.9	22.4	33.9
13 years and over	48.8	65.0	26.9	42.9
Union Coverage:				
Covered	68.7	70.2	26.3	55.6
Not Covered	42.8	59.8	24.1	37.4
Employment Status:				
Part-Time	16.3	23.8	9.3	10.4
Full-Time	48.5	67.4	27.2	43.2
Class of Workers:				
Self-Employed	7.2	18.6	9.7	4.4
Not Self-Employed	46.1	63.6	25.4	40.5
Annual Earnings:				
$1 - $10,000	13.1	24.9	8.9	8.5
$10,001 - $20,000	43.3	66.5	25.4	36.7
$20,001 - $30,000	62.5	79.9	33.0	56.5
$30,001 - $40,000	71.2	85.4	36.8	66.5
$40,001 - $50,000	72.0	84.6	36.5	67.0
$50,001 - $60,000	69.4	84.8	35.7	65.6
$60,000 and over	62.8	81.6	39.3	58.5

Table 6
(continued)

Worker Characteristics	Percentage Included in Pension Plans	Percentage Included in Group Health Plan		Percentage Included in Both Pension and Health Plan
		Total	Employer Paid All	
Industry:				
Agriculture	8.6	20.9	9.8	6.4
Mining/Construction	32.0	51.8	21.9	28.0
Durable Goods	59.2	81.3	35.0	55.5
Nondurable Goods	52.2	73.8	26.4	48.0
Transport, Communication, and Public Utilities	60.4	75.4	31.9	56.0
Wholesale Trade	39.6	68.7	30.6	35.3
Retail Trade	21.9	41.5	14.8	17.7
Finance, Insurance, and Real Estate	46.1	66.5	23.8	39.7
Business Services	23.1	46.7	19.5	19.6
Personal Services	11.7	28.3	10.9	9.4
Entertainment Services	22.9	43.1	19.4	20.2
Professional Services	51.6	61.8	26.7	42.7
Public Administration	81.3	80.0	26.3	71.3
Occupation:				
Managerial	52.1	72.4	30.6	46.6
Professional/Technical	59.8	71.7	29.7	52.2
Sales	28.0	49.9	19.4	23.8
Clerical	47.7	62.5	24.4	39.5
Craft	44.6	35.1	13.9	41.1
Operatives, except Transport	46.4	64.6	26.3	42.3
Transport Operatives	44.2	68.9	25.9	39.6
Laborers	32.6	63.7	26.9	28.9
Service and Other	23.0	51.0	19.0	19.1
Household Status:				
Householder with Relatives	51.0	70.5	27.9	46.9
Spouse of Householder	41.5	48.3	19.1	31.2
Other Relative of Householder	22.2	41.7	15.4	19.0
Nonfamily Householder or Unrelated Individual	41.4	65.1	28.8	38.1

Notes: Sample includes workers who were not in the military, were 18 years or older, and had positive earnings in 1987. There are 68,226 workers in the sample.

Table 7

Linear Probability Models of Inclusion in Employer-Provided Pension and Group Health Insurance Plans

	Dependent Variables			
Explanatory Variable	Included in Pension Plan	Included in Group Health Plan	Included in Fully-Paid Group Health Plan	Included in Both Pension and Group Health Plans
Intercept:	-0.043 (0.013)	0.163 (0.003)	0.085 (0.013)	-0.033 (0.013)
Gender:				
Female	0.022 (0.005)	0.017 (0.004)	0.018 (0.004)	0.024 (0.004)
Male	--	--	--	--
Age:				
18 - 24	--	--	--	--
25 - 34	0.063 (0.006)	0.070 (0.006)	0.037 (0.006)	0.060 (0.006)
35 - 64	0.134 (0.006)	0.067 (0.006)	0.029 (0.006)	0.116 (0.006)
65 and over	0.077 (0.011)	0.082 (0.010)	0.049 (0.011)	0.061 (0.011)
Ethnicity:				
White Nonhispanic	--	--	--	--
Hispanic	-0.052 (0.006)	-0.062 (0.006)	-0.046 (0.006)	-0.053 (0.006)
Black	0.019 (0.006)	-0.005 (0.006)	-0.059 (0.006)	0.014 (0.006)
Other	-0.007 (0.009)	-0.031 (0.009)	-0.025 (0.009)	-0.028 (0.009)

Table 7
(continued)

Explanatory Variable	Dependent Variables			
	Included in Pension Plan	Included in Group Health Plan	Included in Fully-Paid Group Health Plan	Included in Both Pension and Group Health Plans
Education:				
0-8 years	--	--	--	--
9-12 years	0.038 (0.008)	0.056 (0.007)	0.030 (0.008)	0.033 (0.008)
13 years and over	0.033 (0.008)	0.050 (0.008)	0.029 (0.008)	0.029 (0.008)
Union Coverage:				
Covered	0.115 (0.022)	-0.006 (0.022)	-0.015 (0.022)	0.058 (0.022)
Not Covered	--	--	--	--
Employment Status:				
Part-Time	-0.078 (0.005)	-0.158 (0.005)	-0.059 (0.005)	-0.082 (0.005)
Full-Time	--	--	--	--
Class of Worker:				
Self-Employed	-0.271 (0.006)	-0.335 (0.006)	-0.115 (0.006)	-0.252 (0.006)
Not Self-Employed	--	--	--	--
Annual Earnings:				
$1 - $10,000	--	--	--	--
$10,001 - $20,000	0.203 (0.005)	0.288 (0.004)	0.118 (0.005)	0.186 (0.004)
$20,001 - $30,000	0.363 (0.005)	0.379 (0.005)	0.178 (0.005)	0.348 (0.005)

Table 7
(continued)

Explanatory Variable	Dependent Variables: Included in Pension Plan	Included in Group Health Plan	Included in Fully-Paid Group Health Plan	Included in Both Pension and Group Health Plans
$30,001 - $40,000	0.434 (0.007)	0.413 (0.007)	0.211 (0.007)	0.428 (0.007)
$40,001 - $50,000	0.448 (0.009)	0.406 (0.009)	0.209 (0.009)	0.438 (0.009)
$50,001 - $60,000	0.435 (0.012)	0.418 (0.012)	0.205 (0.012)	0.438 (0.012)
$60,000 and over	0.394 (0.011)	0.404 (0.011)	0.247 (0.011)	0.391 (0.011)
Industry:				
Agriculture	--	--	--	--
Mining/Construction	0.015 (0.012)	0.042 (0.012)	0.018 (0.012)	0.012 (0.012)
Durable Goods	0.188 (0.012)	0.232 (0.011)	0.109 (0.012)	0.198 (0.012)
Nondurable Goods	0.167 (0.012)	0.213 (0.012)	0.050 (0.012)	0.175 (0.012)
Transport, Communication, and Public Utilities	0.192 (0.012)	0.182 (0.012)	0.076 (0.012)	0.199 (0.012)
Wholesale Trade	0.069 (0.013)	0.174 (0.013)	0.086 (0.013)	0.071 (0.013)
Retail Trade	0.049 (0.011)	0.091 (0.011)	0.010 (0.011)	0.049 (0.011)
Finance, Insurance, and Real Estate	0.131 (0.012)	0.165 (0.012)	0.021 (0.012)	0.124 (0.012)

Table 7
(continued)

	Dependent Variables			
Explanatory Variable	Included in Pension Plan	Included in Group Health Plan	Included in Fully-Paid Group Health Plan	Included in Both Pension and Group Health Plans
Business Services	-0.020 (0.012)	0.065 (0.012)	0.023 (0.012)	-0.012 (0.012)
Personal Services	-0.007 (0.013)	0.052 (0.012)	0.007 (0.012)	0.010 (0.012)
Entertainment Services	0.037 (0.018)	0.092 (0.017)	0.047 (0.018)	0.046 (0.018)
Professional Services	0.183 (0.011)	0.160 (0.011)	0.076 (0.011)	0.153 (0.011)
Public Administration	0.386 (0.012)	0.213 (0.012)	0.016 (0.012)	0.340 (0.012)
Occupation:				
Managerial	-0.007 (0.007)	0.052 (0.007)	0.015 (0.007)	-0.019 (0.007)
Professional/Technical	0.054 (0.007)	0.063 (0.006)	0.001 (0.007)	0.038 (0.007)
Sales	-0.037 (0.007)	0.012 (0.007)	-0.006 (0.007)	-0.045 (0.007)
Clerical	0.057 (0.006)	0.076 (0.006)	0.020 (0.006)	0.033 (0.006)
Craft	0.026 (0.007)	0.033 (0.007)	0.003 (0.007)	0.016 (0.007)
Operatives, except Transport	0.027 (0.008)	0.061 (0.008)	0.007 (0.008)	0.016 (0.008)
Transport Operatives	0.001 (0.010)	0.016 (0.009)	0.010 (0.009)	-0.017 (0.009)
Laborers	0.040 (0.010)	0.031 (0.009)	0.003 (0.010)	0.027 (0.010)
Service and Other	--	--	--	--

Table 7
(continued)

Explanatory Variable	Dependent Variables Included in Pension Plan	Included in Group Health Plan	Included in Fully-Paid Group Health Plan	Included in Both Pension and Group Health Plans
Household Status:				
Householder with Relatives	0.020 (0.005)	-0.005 (0.005)	-0.040 (0.005)	0.011 (0.005)
Spouse of Householder	0.020 (0.005)	-0.126 (0.005)	-0.081 (0.005)	-0.046 (0.005)
Other Relative of Householder	-0.008 (0.006)	-0.064 (0.006)	-0.051 (0.006)	-0.020 (0.006)
Nonfamily Householder or Unrelated Individual	--	--	--	--
R-squared (adj)	0.303	0.340	0.088	0.290
MSE	0.171	0.159	0.167	0.166
F	725.5	857.4	160.5	680.2

Source: Ordinary least squares estimates from sample of workers who were not in military, were 18 years or older, and had positive earnings in 1987 in the March 1988 Current Population Survey.

Table 8

Summary of Effects of Policy Changes on Fringe Benefit Provision:
Average Percentage Changes Under Tax Systems Existing 1969-1982

PANEL A: TOTAL EFFECTS

Policy	Wages	Pensions	Health Insurance
Effects of 1986 Tax Reform on:			
Quantities	+9.4	+0.9	+10.4
Expenditures	+2.2	+0.8	+10.7
Compensation Shares	-0.3	-1.4	+7.7
Effects of Taxing Health Insurance Contributions on:			
Quantities	-1.7	-5.8	-22.3
Expenditures	-0.9	-6.0	+0.2
Compensation Shares	+0.2	-4.7	+2.2
Effects of Low Tax Cap on Health Insurance on:			
Quantities	-0.4	-2.6	-13.9
Expenditures	-0.2	-2.9	+0.3
Compensation Shares	+0.1	-1.8	+0.7
Effects of Taxing All Benefits on:			
Quantities	-0.8	-64.1	-27.9
Expenditures	+0.8	-51.7	-6.2
Compensation Shares	+3.0	-53.9	-2.4

PANEL B: SUBSTITUTION EFFECTS

Policy	Wages	Pensions	Health Insurance
Effects of 1986 Tax Reform on:			
Quantities	+1.6	-18.5	-6.1
Expenditures	-5.5	-19.2	-6.5
Compensation Shares	+0.7	-13.1	+0.7
Effects of Taxing Health Insurance Contributions on:			
Quantities	+1.0	+2.8	-16.9
Expenditures	+2.1	+3.1	+7.8
Compensation Shares	-0.2	-0.6	+4.6
Effects of Low Tax Cap on Health Insurance on:			
Quantities	+0.7	+1.6	-11.3
Expenditures	+1.1	+1.6	+4.1
Compensation Shares	-0.1	-0.4	+1.8
Effects of Taxing All Benefits on:			
Quantities	+4.3	-53.9	-18.2
Expenditures	+6.7	-36.9	+7.6
Compensation Shares	+2.4	-46.1	+2.4

Table 9

Summary of Effects of Policy Changes on Fringe Benefit Provision: Average Percentage Changes Under Tax Systems Existing 1969-1982

PANEL A: TOTAL EFFECTS

Policy	Wages	Pensions	Health Insurance
Effects of Taxing Health Insurance Contributions on:			
Quantities	-0.7	-4.3	-14.7
Expenditures	-0.6	-4.2	+0.4
Compensation Shares	+0.1	-3.7	+1.8
Effects of Low Tax Cap on Health Insurance on:			
Quantities	-0.1	-1.7	-8.7
Expenditures	-0.1	-1.8	+0.3
Compensation Shares	+0.0	-1.5	+0.4
Effects of Taxing All Benefits on:			
Quantities	-0.4	-48.8	-20.1
Expenditures	+0.7	-36.8	-4.4
Compensation Shares	+2.2	-39.3	-1.6

PANEL B: SUBSTITUTION EFFECTS

Policy	Wages	Pensions	Health Insurance
Effects of Taxing Health Insurance Contributions on:			
Quantities	+0.7	+0.1	-11.9
Expenditures	+0.8	+0.3	+4.0
Compensation Shares	-0.1	-1.5	+3.1
Effects of Low Tax Cap on Health Insurance on:			
Quantities	+0.4	+0.2	-7.4
Expenditures	+0.4	+0.3	+1.9
Compensation Shares	-0.0	-0.6	+1.0
Effects of Taxing All Benefits on:			
Quantities	+3.4	-38.7	-12.1
Expenditures	+4.9	-23.1	+6.4
Compensation Shares	+1.7	-33.8	+1.4

Table 8
(continued)

Notes: The figures show how replacing the tax systems in effect during 1969 through 1982 with the specified tax-policy changes would have changed compensation quantities, expenditures, and shares. Changes are shown in annual percentage terms, averaged over the 14 years. "Total effect" refers to the sum of the substitution, ordinary income, and extra income effects. The substitution effect isolates the impact of the changing tax-price of wages relative to pensions and health insurance.

Sources: Woodbury and Huang (1989).

Table 9
(continued)

Notes: The figures show how the specified tax·policy changes under the 1986 tax reform would change compensation quantities, expenditures, and shares. "Total effect" refers to the sum of the substitution, ordinary income, and extra income effects. The substitution effect isolates the impact of the changing tax·price of wages relative to pensions and health insurance.

Sources: Woodbury and Huang (1989).

Table 10

Simulated Effects of Policy Changes on Federal Personal Income Tax Revenues

Policy	Percentage Change in Revenue Under Tax Systems 1969 - 1982	Percentage Change in Revenue Under 1986 Tax Reform
1986 Tax Reform:		
Aggregate	-21.2	--
Low-Wage Industry	-21.9	--
Medium-Wage Industry	-19.8	--
High-Wage Industry	-22.8	--
Taxing Health Insurance Contributions:		
Aggregate	+8.9	+8.3
Low-Wage Industry	+6.9	+7.7
Medium-Wage Industry	+7.2	+6.8
High-Wage Industry	+12.8	+10.8
Low Tax Cap on Health Insurance:		
Aggregate	+2.0	+1.5
Low-Wage Industry	+0.0	+0.2
Medium-Wage Industry	+0.6	+0.6
High-Wage Industry	+5.3	+4.3
Taxing All Benefits:		
Aggregate	+19.0	+17.6
Low-Wage Industry	+13.1	+14.5
Medium-Wage Industry	+14.8	+13.9
High-Wage Industry	+29.9	+25.9

Notes: The "Aggregate" figures show average annual percentage changes in federal revenues from the personal income tax that are predicted under the specified policies. "Low-Wage Industry" estimates show how the tax bill of the average worker in low-wage industries would change, and similarly for the "Medium-Wage Industry" and "High-Wage Industry" estimates.

Source: Woodbury and Huang (1989).

Table 11

Effects of Policy Changes on Fringe Benefit Quantities, by Industry Groups

PANEL A: AVERAGE PERCENTAGE CHANGES UNDER TAX SYSTEMS EXISTING 1969 - 1982

Policy/Industry	Wages	Pensions	Health Insurance
1986 Tax Reform:			
Aggregate	+9.4	+0.9	+10.4
Low-Wage Industries	+5.0	+1.9	+8.2
Medium-Wage Industries	+8.9	+0.5	+11.3
High-Wage Industries	+13.5	+0.7	+10.4
Taxing Health Insurance Contributions:			
Aggregate	-1.7	-5.8	-22.3
Low-Wage Industries	-0.7	-1.9	-20.0
Medium-Wage Industries	-1.5	-6.0	-19.9
High-Wage Industries	-2.9	-5.6	-26.2
Low Tax Cap on Health Insurance:			
Aggregate	-0.4	-2.6	-13.9
Low-Wage Industries	-1.0	-11.5	-11.5
Medium-Wage Industries	-0.7	-5.5	-13.2
High-Wage Industries	-2.1	-14.8	-28.1
Taxing All Benefits:			
Aggregate	-0.8	-64.1	-27.9
Low-Wage Industries	+0.8	-81.1	-19.8
Medium-Wage Industries	-0.2	-70.2	-24.9
High-Wage Industries	-3.0	-57.2	-32.7

PANEL B: PERCENTAGE CHANGES UNDER 1986 TAX REFORM

Policy/Industry	Wages	Pensions	Health Insurance
Taxing Health Insurance Contributions:			
Aggregate	-0.7	-4.3	-17.3
Low-Wage Industries	-0.4	-5.9	-12.8
Medium-Wage Industries	-0.5	-4.7	-13.9
High-Wage Industries	-1.1	-3.7	-15.9
Low Tax Cap on Health Insurance:			
Aggregate	-0.1	-1.7	-8.7
Low-Wage Industries	-0.0	-0.5	-1.7
Medium-Wage Industries	-0.0	-0.9	-5.1
High-Wage Industries	-0.3	-2.5	-13.5
Taxing All Benefits:			
Aggregate	-0.4	-48.8	-20.1
Low-Wage Industries	-0.9	-68.4	-15.9
Medium-Wage Industries	-0.7	-52.3	-16.7
High-Wage Industries	-2.8	-42.9	-23.9

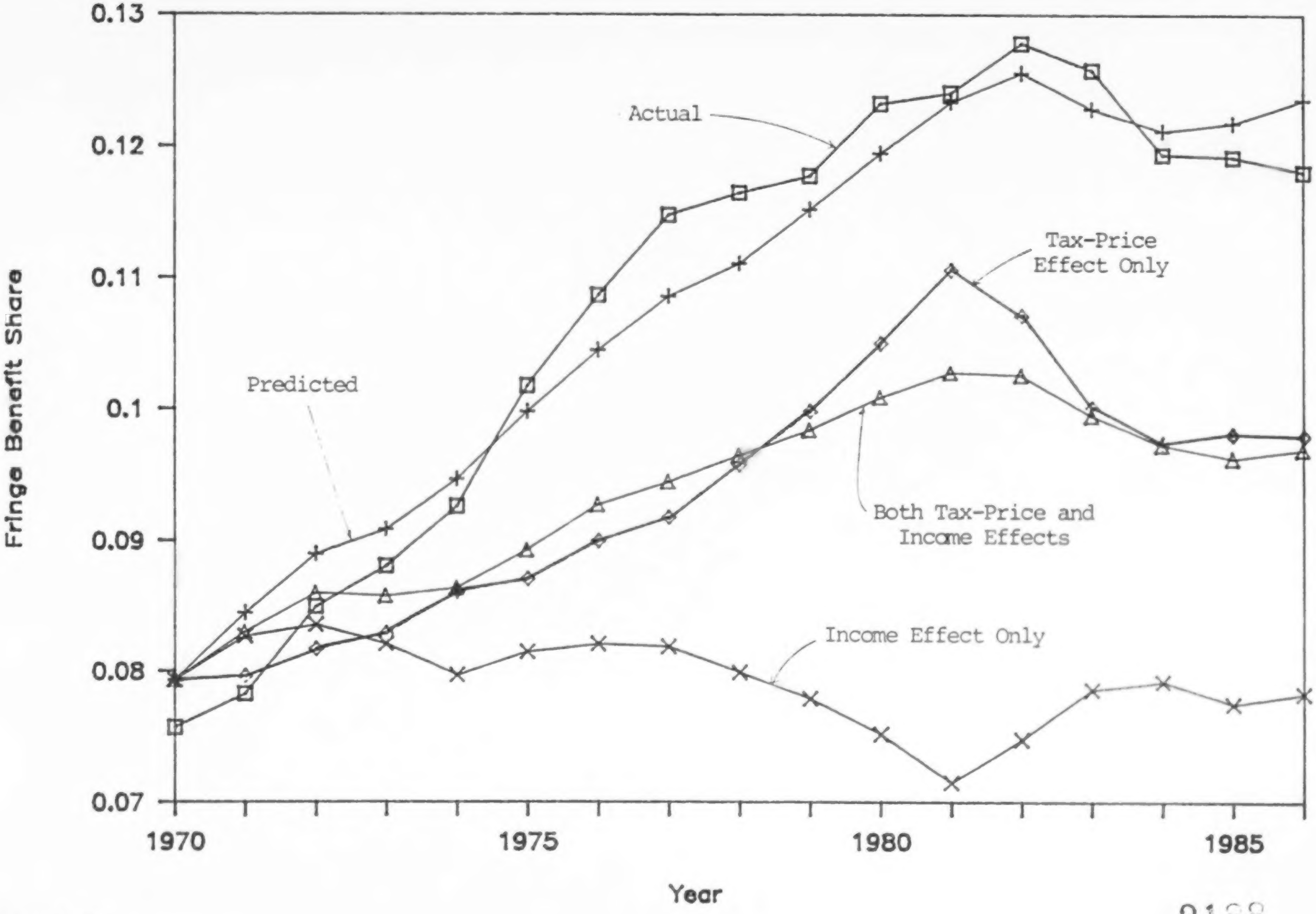
Table 11
(continued)

Notes: The figures show how the specified tax-policy changes would alter compensation quantities. Panel A show changes under the tax systems in effect during 1969-1982. Panel B shows changes under the current tax system. All changes are total effects (sum of substitution, ordinary income, and extra income effects) in annual percentage terms.

Sources: Woodbury and Huang (1989).

Figure 1

Actual, Predicted, and Simulated Fringe Benefit Shares, 1969-1986



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NOTES

1. It is important to distinguish between tax-exempt benefits and tax-deferred benefits. Health insurance is an example of a tax-exempt benefit--health insurance contributions are not treated as taxable income under the federal personal income tax. Pension contributions are an example of a tax-deferred benefit--although pension contributions are not treated as taxable income at the time they are made, pension benefits are taxed when the employee receives them in retirement. See, for example, Korczyk 1984.

2. The following discussion draws on Hart, Bell, Frees, Kawasaki, and Woodbury, 1988.

3. In preparing the figures in Table 1, the reclassification of U.S. NWLCs by the European Communities method, as presented in Table A2.6 of Hart (1984), has been followed closely. Since Hart's Table A2.6 is written with specific reference to the Chamber of Commerce Data, no special comment is required regarding the Chamber of Commerce Figures shown in Table 1. However, use of the National Income and Product Accounts data required some minor reclassification that should be mentioned. For the Accounts data, Statutory Social Welfare Costs equal Employer Contributions for Social Insurance (from Accounts Table 6.12) plus Worker's Compensation (Accounts Table 6.13). Voluntary Social Welfare Costs equal Other Labor Income of Private Domestic Industries minus Workers' Compensation (Accounts Table 6.13). Note that because

Social Welfare Costs are the only NWLCs enumerated in the Accounts, Total social welfare costs (row b) and Total NWLCs (row h) are the same for the Accounts.

4. Detailed definitions of each category are given in the table notes.

5. These figures are derived for each of the one-digit industries reported in the U.S. National Income and Product Accounts in five selected years spanning the mid-1960s through 1985. The figures displayed are based on methods developed in Hart (1984, Table 2.8, p. 17) and are conceptually similar to Hart's "Fixed NWLC I" and "Ratio I (fixed/variable)" measures in that they exclude pay for time not worked, and hence implicitly treat pay for time not worked as a variable cost. Specifically, the figures take fixed NWLCs to be employer contributions to state Unemployment Insurance, Supplemental Unemployment Insurance Benefits, Pensions, Health Insurance, and Life Insurance. In terms of the Accounts, then, fixed NWLCs are Unemployment Insurance plus Other Labor Income minus Workers' Compensation. Variable NWLCs, on the other hand, are Employer Contributions to Social Security (OASDHI) and Workers' Compensation. Again in terms of the Accounts, variable NWLCs are Social Insurance contributions (excluding Unemployment Insurance) plus Workers' Compensation. Because the Accounts do not enumerate each required item by industry, it was necessary to impute Unemployment Insurance and Workers' Compensation by industry. This was accomplished by using industry-level data from the Chamber of Commerce. Specifically, the ratio of UI contributions to the sum of UI and Social

Security contributions was computed by industry in the Chamber of Commerce data, and the ratio applied to the Accounts figure for Contributions for Social Insurance, in order to obtain an estimate of UI contributions by industry. Also, a similar ratio was constructed for Workers' Compensation contributions and applied to the Accounts data in order to obtain an estimate of Workers' Compensation contributions by industry.

6. Unions may nevertheless influence employee benefit provision by negotiating new kinds of benefits that are later adopted in the nonunion sector. Indeed, this is clearly the role unions have played historically, as with pensions.

7. An exception is the paper by Turner (1987).

8. Another factor that may have contributed to the peaking of the employee benefit share in 1982 is the boom in the stock market that took place in the mid-1980s. Since the value of pension funds increased with the increase in stock prices, it was possible for employers to make smaller incremental contributions to pension funds to cover their pension liabilities (Munnell 1987). The model discussed here does not include a variable capturing the influence of the stock market on pension contributions, but we consider this an important topic for future research.

9. It should be noted that a variety of trends--such as health-care cost management and benefit redesign (including the movement to defined-contribution pension plans)--should be viewed as manifestations of the slowing growth of employee benefits, rather than as causes of that slowing growth.

10. Similar arguments have been made about employer-provided pensions (Munnell 1984, 1985, 1988). It has usually gone unmentioned that lump-sum taxes are at best difficult to implement, and that efficient government provision of health care services (as of any good or service) entails myriad organizational problems.

11. Taylor and Wilensky (1983), Phelps (1984-85), and Adamache and Sloan (1985) offer estimates of the revenue effects of taxing health benefits; however, because they consider only tradeoffs between health benefits and wages, these studies are open to the criticism that they overstate the revenue gains of taxing health contributions.

Appendix A.

Employee-Benefit Data Problems

Tracking employee benefits in the U.S. poses a severe problem because government efforts to maintain suitable statistics have been sporadic. The National Income and Product Accounts are a good source of data on employer contributions to both legally mandated and voluntary social welfare programs, but the Accounts suffer from omission of other types of nonwage labor costs. Specifically, the Accounts subsume payments for days not worked and in-kind benefits under direct wage and salary payments. Also, the Accounts have no counterpart to various other expenses of a social nature or to vocational training. These deficiencies are augmented by a reluctance of the Bureau of Economic Analysis of the U.S. Department of Commerce to publish detailed data. For example, although the Bureau of Economic Analysis publishes a series on Employer Contribution to Social Insurance (Table 6.12) by one-digit industry, it does not disaggregate these contributions into their components--chiefly contributions to social security (OASDHI) and unemployment insurance. Similarly, although the Bureau of Economic Analysis does disaggregate Other Labor Income--composed mainly of contributions to pensions, health insurance, life insurance, workers' compensation, and supplemental unemployment insurance--into its components on an economy-wide basis, it does not publish disaggregations by industry. Although it is possible to adjust the Accounts data using other data sources in order to partially overcome these aggregation problems, the usefulness of the Accounts remains limited for many research efforts.

It is worth noting that the Bureau of Labor Statistics of the U.S. Department of Labor gathered excellent data on employee benefits for about a decade. It is unfortunate that the Survey of Employer Expenditures for Employer Compensation was gathered only from 1966 through 1977. Since 1977, the Bureau of Labor Statistics has gathered data for the Employment Cost Index, but these data are published in a way that makes them extremely awkward to use. Moreover, as Ehrenberg (1987) has noted, the micro data underlying Employment Cost Index figures have not been made available to researchers.

Because of the lack of current government statistics on employee benefits, the private U.S. Chamber of Commerce has gathered data on benefits since the late-1940s. The Chamber of Commerce data have the advantage that they are the only available source of data for several types of benefits, such as payments for days not worked, in-kind benefits, other expenses of a social nature, and vocational training. However, they have the disadvantage that they are taken from a self-reported survey of a self-selected sample of employers. As a result, they pose four problems. First, the composition of the sample has changed over time, and year-to-year changes that are observed may be sensitive to that changing composition. Second, in any given year, the figures shown in the Chamber of Commerce survey seem not to represent average labor costs of U.S. employers, again because of self-selection in response (see Hart and others 1988). Third, cross-sectional comparisons of industries or groups of workers may be distorted by which employers in each industry choose to respond to the survey. Finally, self-reporting could give rise to various biases that can only be guessed at. All of these problems suggest that the Chamber of Commerce survey could give a biased picture of employee benefits in the U.S.

Various ways of benchmarking the Chamber of Commerce data so as to overcome the sampling bias that exists in the data have been explored. Unfortunately, these attempts have not been successful to date. The basic strategy of benchmarking would be to find elements of the Chamber of Commerce data that are shared with scientifically-sampled surveys such as the National Income and Product Accounts and the Survey of Employer Expenditures for Employee Compensation (the survey that ended in 1977). By comparing the components of compensation that are reported in both the Chamber of Commerce and the scientifically-sampled surveys, it should in principle be possible to adjust the components of compensation that are uniquely available in the Chamber of Commerce survey. Attempts to do just this have been unsuccessful for two reasons. First, the Chamber of Commerce data and the National Income and Product Accounts overlap only in two series--legally mandated and voluntary contributions to social welfare programs. In one of these series--legally mandated contributions--the two data sources are in reasonable accord (see Table 1, row c). In the other--voluntary social welfare costs--they diverge in some years by over 25 percent (see Table 1, row d). How similar or divergent other series would be is a matter of speculation; hence, it would be unwise to adjust all Chamber of Commerce figures downward by some fixed percentage. Second, use of the Survey of Employer Expenditures for Employer Compensation as a benchmark has been stymied because that survey, contrary to the belief of many researchers, appears not to be representative of the population of all firms in the U.S. The Employment Cost Index still needs to be fully explored as a possible benchmark for the Chamber of Commerce data, but this task, too, cannot be completed until the Bureau of Labor Statistics makes available the employer data underlying the Employment Cost Index.

Appendix B.

Studies of the Tax Treatment of Employee Benefits: A Review

Through 1987, there had appeared numerous studies of the influence of the favorable tax treatment of benefits on benefit levels or on the mix of total compensation. These include Alpert (1983), Atrostic (1983), Holmer (1984), Leibowitz (1983), Long and Scott (1982), Sloan and Adamache (1986), Taylor and Wilensky (1983), Turner (1987), Vroman and Anderson (1984), and Woodbury (1983). Some additional studies (Goldstein and Pauly 1976; Mumy and Manson 1985) attempted to draw inferences about the effects of taxes on benefits, but did so without including explicit tax measures.

The studies that included explicit tax measures took essentially one of two empirical approaches. The first was to regress (for an individual or a group) a measure of the level of employer contributions to all employee benefits (FB), or pension benefits (PB), or health insurance benefits (HB) on a measure of the marginal tax rate facing the group (or individual) and a vector of control variables:

$$(1)\qquad FB = a_0 + a_1 t + a_2 x_2 + \ldots + a_m x_m + e_1$$

$$(2)\qquad PB = b_0 + b_1 t + b_2 x_2 + \ldots + b_m x_m + e_2$$

$$(3)\qquad HB = c_0 + c_1 t + c_2 x_2 + \ldots + c_m x_m + e_3,$$

where t is the marginal tax rate facing the group or individual, the x_i represent (m - 1) control variables, the a_i, b_i, and c_i are coefficients, and the e_i are normally distributed error terms. This procedure or some variant of it was followed by Atrostic (1983), Leibowitz (1983), Sloan and Adamache (1986), Taylor and Wilensky (1983), and Vroman and Anderson (1984).

The alternative approach was to use as a dependent variable in equations like (1), (2), and (3) not the level of benefits per worker, but the share of total compensation received by workers as employee benefits, pension benefits, or contributions to health insurance. Usually these shares have been specified as:

(4) $FB/TC = FB/(FB + WS)$

(5) $PB/TC = PB/(PB + WS)$

(6) $HB/TC = HB/(HB + WS)$,

where TC refers to total compensation per worker, and WS are wage and salary payments per worker. This approach or some variant of it was taken by Alpert (1983), Long and Scott (1982), Sloan and Adamache (1986), Turner (1987), and Woodbury (1983). One possible advantage of this latter approach was that it could be shown to have an explicit link to well-known consumer theoretic models (Woodbury 1983).

These two approaches and the studies based on them shared an important weakness that needed to be corrected: Essentially, none considered that the costs of providing benefits differ across benefits, over time, by size of firm, and by region. The effect of this deficiency was that none of these studies was able to estimate a tradeoff between any pair of employee benefits (for example, between pensions and health insurance). Among other things, this meant that none of the above studies was of use in estimating the effect of a change in tax policy that would be specific to just one benefit (a tax cap on health insurance contributions, for example) on the amount of some other benefit provided by the employer.[11] Neither would any of the early studies be of use in determining whether the impact of taxing both pensions and health insurance would have a different impact on the provision of pensions than on the provision of health insurance.

The same deficiency implies that the early studies may have obtained biased estimates of tax effects on employee benefits as a whole (or on a single specific benefit). In effect, the early studies made untenable simplifying assumptions about the rate at which the employer is willing to trade health for pension benefits. This creates an omitted variables bias that could, in principle, lead to mistaken inferences about the relation between taxes and employee benefits.

Another deficiency shared by most of the early studies is that they had difficulty separating income effects from tax (or price-substitution) effects on the provision of nonwage benefits. In some studies, income effects were ignored, and in most studies where they were distinguished, collinearity between income and marginal tax rates frustrated the effort. The reason for the difficulty is that incomes and marginal tax rates tend to change together over time; even in cross-section there is a close relation between the income and marginal tax rates faced by a household. This close relation poses problems for econometric estimation. The work by Woodbury and Huang (1988, 1989), which is relied upon in the main text, represents an attempt to overcome some of the problems encountered in the earlier studies.

REFERENCES

Adamache, Killard W. and Frank A. Sloan. "Fringe Benefits: To Tax or Not to Tax?" National Tax Journal 38 (March 1985): 47-64.

Alpert, William T. "Unions and Private Wage Supplements." Journal of Labor Research 3 (Spring 1982): 179-199.

Alpert, William T. "Manufacturing Workers' Private Wage Supplements: A Simultaneous Equations Approach." Applied Economics 15 (June 1983): 363-378.

Andrews, Emily S. The Changing Profile of Pensions in America. Washington, D.C.: Employee Benefits Research Institute, 1985.

Atrostic, B. K. "Comment on Leibowitz." In The Measurement of Labor Cost, edited by Jack E. Triplett. Chicago: University of Chicago Press and NBER, 1983, pp. 389-394.

Bell, David N. F. and Robert A. Hart. "On-the-Job and For-the-Job Efficiency Labour Payments." Discussion Paper No. 8806, Department of Political Economy, University of Glasgow, 1988.

Birnbaum, Jeffrey H. "Rostenkowski Sets Plan to Ease Law on Health Benefits." Wall Street Journal, April 13, 1989.

Chen, Yung-Ping. "The Growth of Fringe Benefits: Implications for Social Security." Monthly Labor Review 104 (November 1981): 3-10.

Chollet, Deborah J. Employer-Provided Health Benefits. Washington, D.C.: Employee Benefit Research Institute, 1984.

Congressional Budget Office. Tax Policy for Pensions and Other Retirement Saving. Washington, D.C.: Congress of the United States, Congressional Budget Office, April 1987.

Cornwell, Christopher, Stuart Dorsey, and Nasser Mehrzad. "Opportunistic Behavior by Firms in Implicit Pension Contracts." Paper presented at the Midwest Economics Association Annual Meeting, Cincinnati, Ohio, March 30-April 1, 1989.

Denzau, Arthur T. and Clifford M. Hardin. "Company Retirement Plans Eight Years after ERISA." Center for the Study of American Business, Washington University (St. Louis), Formal Publication No. 55, 1983.

Ehrenberg, Ronald G. "What Is a Benefit?" Paper prepared for Bureau of Labor Statistics Wage Concepts Review Project, January 1987.

Employee Benefits Research Institute. Fundamentals of Employee Benefits. Washington, D.C.: Employee Benefits Research Institute, 1987.

Employee Benefits Research Institute. 1988a. "Issues and Trends in Retiree Health Insurance Benefits." EBRI Issue Brief 84 (November 1988): 1-11.

Employee Benefits Research Institute. 1988b. "Dependent Care: Meeting the Needs of a Dynamic Work Force." EBRI Issue Brief 85 (December 1988): 1-19.

Employee Benefits Research Institute. 1989a. "Managing Health Care Costs and Quality." EBRI Issue Brief 87 (February 1989): 1-14.

Employee Benefits Research Institute. 1989b. "Pension Plan 'Surplus': Revert, Transfer, or Hold?" EBRI Issue Brief 88 (March 1989): 1-22.

Employee Benefits Research Institute. 1989c. "Questions and Answers about Employee Benefits." EBRI Issue Brief 89 (April 1989): 1-23.

Feenberg, Daniel and Jonathan Skinner. "Sources of IRA Savings." Cambridge, Mass.: National Bureau of economic Research Working Paper No. 2845, February 1989.

Feldstein, Martin. "The Welfare Loss of Excess Health Insurance." Journal of Political Economy 81 (March/April 1973): 251-280.

Feldstein, Martin. "The High Cost of Hospitals--And What to Do About It." The Public Interest 48 (Summer 1977): 40-54.

Feldstein, Martin and Bernard Friedman. "Tax Subsidies, the Rational Demand for Insurance, and the Health Care Crisis." Journal of Public Economies 7 (April 1977): 155-178.

Fosu, Augustin Kwasi. "Unions and Fringe Benefits: Additional Evidence." Journal of Labor Research 5 (Summer 1984): 247-254.

Freeman, Richard B. "The Effects of Unionism on Fringe Benefits." Industrial and Labor Relations Review 34 (July 1981): 489-509.

Friedman, Dana E. "Impacts of Dependent Care Programs." Paper No. 27, Commission on Workforce Quality and Labor Market Efficiency, U.S. Department of Labor, May 1989.

Goddeeris, John H. "Universal Health Insurance Coverage: Combining Expanded Private Coverage with a Public Program." Report Prepared for the Governor's Commission on Access to Health Care, Michigan State University, April 1989.

Goldstein, Gerald S. and Mark V. Pauly. "Group Health Insurance as a Local Public Good." In The Role of Health Insurance in the Health Services Sector, edited by Richard N. Rosett. New York: Columbia University Press and NBER, 1976, pp. 73-110

Halperin, Daniel. "Broadening the Tax Base--The Case of Fringe Benefits." National Tax Journal 37 (September 1984): 271-281.

Hart, Robert A. The Economics of Non-Wage Labour Costs. London: George Allen and Unwin, 1984.

Hart, Robert A., David N. F. Bell, Rudolf Frees, Seiichi Kawasaki, and Stephen A. Woodbury. Trends in Non-Wage Labor Costs and Their Effects on Employment. Brussels and Luxembourg: Office for Official Publications of the European Communities, 1988.

Hayghe, Howard V. "Employers and Child Care: What Role Do They Play?" Monthly Labor Review 111 (September 1988): 38-44.

Holmer, Martin. "Tax Policy and the Demand for Health Insurance." Journal of Health Economics 3 (December 1984): 203-221.

Ippolito, Richard A. "A Study of the Regulatory Effect of the Employee Retirement Income Security Act." Journal of Law and Economics 31 (April 1988): 85-125.

Katz, Avery and Gregory Mankiw. "How Should Fringe Benefits Be Taxed?" National Tax Journal 38 (March 1985): 37-46.

Korczyk, Sophie M. Retirement Security and Tax Policy. Washington, D.C.: Employee Benefit Research Institute, 1984.

Kotlikoff, Laurence J. and Daniel E. Smith. Pensions in the American Economy. Chicago: University of Chicago Press, 1983.

LaForce, John J. "Section 89--A Crazy Tax Law." Wall Street Journal, April 12, 1989.

Lazear, Edward P. "Agency, Earnings Profiles, Productivity, and Hours Restrictions." American Economic Review 71 (September 1981): 606-620.

Leibowitz, Arlene. "Fringe Benefits in Employee Compensation." In The Measurement of Labor Cost, edited by Jack E. Triplett, 1983, pp. 371-389.

Lester, Richard A. "Benefits as a Preferred Form of Compensation." Southern Economic Journal 33 (April 1967): 488-495.

Logue, Dennis E. Legislative Influence on Corporate Pension Plans. Washington, D.C.: American Enterprise Institute, 1979.

Long, James E. and Frank A. Scott. "The Income Tax and Nonwage Compensation." Review of Economics and Statistics 64 (May 1982): 211-219.

Mincer, Jacob. "Union Effects: Wages, Turnover, and Job Training." In New Approaches to Labor Unions, Research in Labor Economics, Supplement 2, edited by Ronald G. Ehrenberg. Greenwich, Connecticut: JAI Press, 1983, pp. 217-252.

Mitchell, Olivia S. "The Effects of Mandating Benefits Packages." Paper No. 32, Commission on Workforce Quality and Labor Market Efficiency, U.S. Department of Labor, May 1989.

Mitchell, Olivia S. and Emily S. Andrews. "Scale Economies in Private Multi-Employer Pension Systems." *Industrial and Labor Relations Review* 34 (July 1981): 522-530.

Mumy, Gene E. and William D. Manson. "The Relative Importance of Tax and Agency Incentives to Offer Pensions: A Test Using the Impact of ERISA." *Public Finance Quarterly* 13 (October 1985).

Munnell, Alicia H. "Employee Benefits and the Tax Base." *New England Economic Review* (January 1984): 39-55.

Munnell, Alicia H. "The Economic Effects of the Growth of Employer-Provided Fringe Benefits." In *Distribution and Economics of Employer-Provided Fringe Benefits*, Hearings before the Committee on Ways and Means, U.S. House of Representatives, September 17-18, 1984. Washington, D.C.: USGPO, 1985, pp. 421-428.

Munnell, Alicia H. "Public versus Private Provision of Retirement Income." *New England Economic Review* (May/June 1988): 51-58.

Munnell, Alicia H. with Nicole Ernsberger. "Pension contributions and the Stock Market." *New England Economic Review* (November/December 1987): 3-14.

Norwood, Janet L. "Measuring the Cost and Incidence of Employee Benefits." *Monthly Labor Review* 111 (August 1988): 3-8.

Pauly, Mark V. "Taxation, Health Insurance, and Market Failure in the Medical Economy." *Journal of Economic Literature* 24 (June 1986): 629-675.

Phelps, Charles E. "Taxing Health Insurance: How Much Is Enough?" *Contemporary Policy Issues* 3 (Winter 1984-85): 47-54.

Pozo, Susan and Stephen A. Woodbury. "Pensions, Social Security, and Asset Accumulation." *Eastern Economic Journal* 12 (July-September 1986): 273-281.

Rice, Robert G. 1966a. *An Analysis of Private Wage Supplements*. Ph.D. Dissertation, Columbia University, 1966.

Rice, Robert G. 1966b. "Skill, Earnings, and the Growth of Wage Supplements." *American Economic Review* 56 (May 1966): 583-593.

Robins, Philip K. "Federal Support of Child Care: Current Policies and a Proposed New System." Focus 11 (Summer 1988): 1-9. (Institute for Research on Poverty, University of Wisconsin.)

Rodgers, Fran S. and Charles Rodgers. "Mixing Careers and Child Rearing." Paper No. 31, Commission on Workforce Quality and Labor Market Efficiency, U.S. Department of Labor, May 1989.

Rossiter, Louis F. and Amy K. Taylor. "Union Effects on the Provision of Health Insurance." Industrial Relations 21 (Spring 1982): 167-177.

Schiller, Bradley R. and Randall D. Weiss. "The Impact of Private Pensions on Firm Attachment." Review of Economics and Statistics 61 (August 1979): 369-380.

Shapiro, Carl and Joseph E. Stiglitz. "Equilibrium Unemployment as a Worker Discipline Device." American Economic Review 74 (June 1984): 433-444.

Sloan, Frank A. and Killard W. Adamache. "Taxation and the Growth of Nonwage Compensation." Public Finance Quarterly 14 (April 1986): 115-137.

Smeeding, Timothy M. "The Size Distribution of Wage and Nonwage Compensation: Employer Cost versus Employee Value." In The Measurement of Labor Cost, edited by Jack E. Triplett. Chicago: University of Chicago Press and NBER, 1983, pp. 237-277.

Staines, Graham L. "Working Hours Flexibility." Paper No. 30, Commission on Workforce Quality and Labor Market Efficiency, U.S. Department of Labor, May 1989.

Stein, Bruno. Social Security and Pensions in Transition. New York: The Free Press, 1980.

Steuerle, Eugene and Ronald Hoffman. "Tax Expenditures for Health Care." National Tax Journal 32 (June 1979): 101-115.

Stipp, David. "Laws on Health Benefits Raise Firms' Ire." Wall Street Journal, December 28, 1989.

Stout, Hilary. "Tax Code's Much-Maligned Section 89 Is Likely To Be Amended Before It Can Even Take Effect." Wall Street Journal, May 2, 1989.

Sullivan, Sean and Rosemary Gibson. "Tax-Related Issues in Health Care Market Reform." In Market Reforms in Health Care, edited by Jack A. Meyer. Washington, D.C.: American Enterprise Institute, 1983, pp. 185-197.

Taylor, Amy K. and Gail R. Wilensky. "The Effect of Tax Policies on Expenditures for Private Health Insurance." In Market Reforms in Health Care, edited by Jack A. Meyer. Washington, D.C.: American Enterprise Institute, 1983, pp. 163-184.

Ture, Norman B. with Barbara A. Fields. The Future of Private Pension Plans. Washington, D.C.: American Enterprise Institute, 1976.

Turner, Robert W. "Are Taxes Responsible for the Growth in Fringe Benefits?" National Tax Journal 40 (June 1987): 205-220.

Venti, Steven F. and David A. Wise. "Have IRAs Increased U.S. Savings?: Evidence from the Consumer Expenditure Surveys." Cambridge, Mass.: National Bureau of Economic Research Working Paper No. 2217, April 1987.

Vogel, Ronald J. "The Tax Treatment of Health Insurance Premiums as a Cause of Overinsurance." In National Health Insurance, edited by Mark V. Pauly. Washington, D.C.: American Enterprise Institute, 1980, pp. 220-249.

Vroman, Susan and Gerard Anderson. "The Effects of Income Taxation on the Demand for Employer-Provided Health Insurance." Applied Economics 16 (February 1984): 33-43.

Wolf, Douglas A. and Frank Levy. "Pension Coverage, Pension Vesting, and the Distribution of Job Tenures." In Retirement and Economic

Behavior, edited by Henry J. Aaron and Gary Burtless. Washington, D.C.: Brookings Institution, 1984, pp. 23-61.

Woodbury, Stephen A. "Substitution Between Wage and Nonwage Benefits." American Economic Review 73 (March 1983): 166-182.

Woodbury, Stephen A. "ERISA and the Provision of Retirement Benefits." Paper presented at the Midwest Economics Association Annual Meeting, Chicago, Illinois, April 5-7, 1984.

Woodbury, Stephen A. and Wei-Jang Huang. "The Slowing Growth of Fringe Benefits." Paper presented at the Eastern Economic Association Annual Convention, Boston, Massachusetts, March 10-12, 1988.

Woodbury, Stephen A. and Wei-Jang Huang. Taxation and Employer-Provision of Fringe Benefits. Final Report to the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services. Kalamazoo, Michigan: W. E. Upjohn Institute for Employment Research, February 1989.

U.S. Department of Commerce, Bureau of Economic Analysis. The National Income and Product Accounts of the United State, 1929-82, Statistical Tables. Washington, D.C.: USGPO, September 1986.

U.S. Department of Commerce, Bureau of Economic Analysis. Survey of Current Business 67 (July 1987).

U.S. Department of Commerce, Bureau of Economic Analysis. Survey of Current Business 68 (July 1988).

U.S. Department of Labor. Employee Benefits in Medium and Large Firms, 1986. Bureau of Labor Statistics Bulletin 2281. Washington, D.C.: USGPO, June 1987.

40. PRE-EMPLOYMENT TESTING AND EMPLOYEE PRODUCTIVITY

Lawrence M. Rudner

LMP Associates and
American Institutes for Research

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40. PRE-EMPLOYMENT TESTING AND EMPLOYEE PRODUCTIVITY

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Although frequently attacked as invalid, demeaning, biased, illegal, and irrelevant, pre-employment testing procedures appear to be increasing in popularity. The American Society for Personnel Administration found 39 percent of 360 companies surveyed were testing more in 1985 than in 1980, and 44 percent were considering even more testing. A 1988 survey of 245 human resource executives by the Bureau of National Affairs (a publisher) found that 63 percent of surveyed companies ask applicants to supply work samples or take performance tests, while 30 percent require ability tests, and 25 percent test for job knowledge. A new referral system being considered by the U.S. Employment Service, a part of the Department of Labor, could result in the testing of several million applicants annually.

Many prominent companies and organizations are making extensive use of tests. The Illinois Department of Employment Security used a written multiple choice test to screen 50,000 blue collar applicants at Diamond Star. At American Telephone and Telegraph, testing is a routine part of hiring and promotion through the second layer of management. International Business Machines uses skill and aptitude tests to evaluate applicants for about 75 percent of entry level jobs. Manpower expects to test over 700,000 applicants this year. Corporate executives, state officials, and federal policymakers are discovering that the judicious use of formal assessment procedures may lead to increased efficiency and productivity. The benefits of testing appear to outweigh its costs and concerns.

Part of the resurgence of testing is attributable to clearer definitions of acceptable practice. The landmark case of Griggs v. Duke Power (1971) resulted in a legal precedent requiring defendants to demonstrate adequate validity. In 1978, the Equal Employment Opportunity Commission established "Uniform Guidelines on Employee Selection Procedures." In 1974 and again in 1986, the American Psychological Association, the National Council on Measurement in Education, and the American Educational Research Association adopted professional standards for educational and psychological tests. And in 1987, the Society for Industrial and Organizational Psychology issued the third edition of its own principles for the validation and use of personnel selection procedures.

Legal precedents and federal and professional guidelines help both the test developer and its users. The developer can conduct appropriate studies and prepare necessary documentation. When assured that tests meet legal and professional standards, potential customers can use them with greater confidence.

Under the right conditions, pre-employment testing can vastly improve corporate productivity. But, testing is marked with issues that employers are often ill-equipped to handle. What does an employer do about black applicants who, on average, score lower than whites on standardized tests? How does an employer demonstrate that a test is job-related? Failure to have good answers to these questions could easily result in litigation. However, readily available "good" answers are lacking. Once a testing program is found to adversely impact a protected group, the burden of defending the program rests with the employer. The measurement community, the courts, and professional associations are divided on these and other issues. Further, there are no groups dedicated to providing employers with objective information regarding testing issues and practice.

While testing can lead to increased productivity, there is little to indicate that companies can properly implement a testing program or evaluate its effectiveness. Many reputable test publishers quickly point out that the average consumer places too much value on testing (Deutsch, 1988). At best, tests only estimate a person's ability or the extent to which a person possesses some attribute. Tests should only be used to enhance an employment decision. Too often, test results are treated as scientific evidence that inappropriately replaces professional judgment in making decisions.

This paper describes the conditions under which pre-employment testing can improve productivity. It identifies special problems and issues associated with employment testing and makes appropriate recommendations for federal action.

THE UTILITY OF FORMAL ASSESSMENT

The utility of a selection procedure may be defined as the increase in productivity as a result of incorporating that procedure. Taylor and Russell (1939) and Brogden (1949) have shown that the utility of a testing program can be estimated as a function of just three factors:

1. the correlation between test scores and job productivity (the predictive validity of the test),
2. the percentage of applicants being hired (the selection ratio), and
3. the level of performance necessary for someone to be considered successful -- defined as the proportion of all applicants who would be classified as successful (base rate).

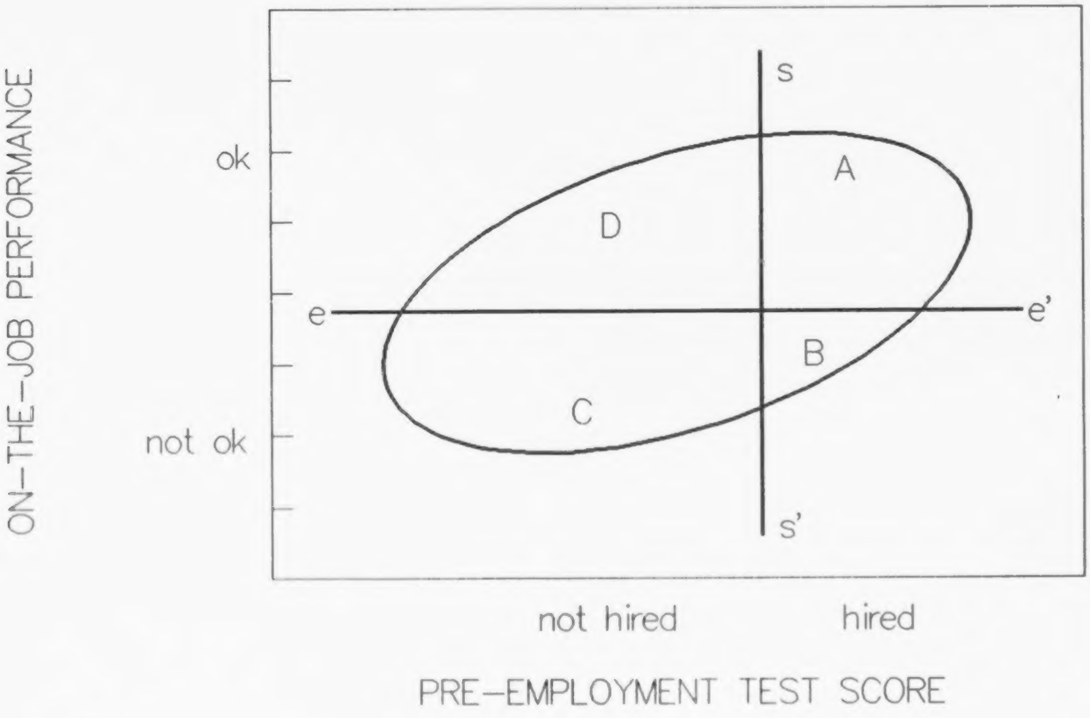
Figure 1 illustrates the relationship between test scores and performance. For example, suppose we have a large group of examinees and each examinee has two scores -- one pre-employment test score and one measure of on-the-job performance. If we plot test scores along the x-axis and performance levels along the y-axis, the sets of scores would result in a scatterplot in the shape of an ellipse. The orientation of the ellipse reflects the correlation between testing and job performance. The closer the orientation is to 45°, the greater the validity of the test. In Figure 1, the correlation between testing and job performance, that is, the validity coefficient, is .35 -- the value Ghiselli (1973) found to be average for proficiency criteria.

Now suppose, the employer uses test scores to hire new applicants. Those scoring above a certain cut-score are hired; those below that value are not. Here, the cut score is shown by line s-s' and the selection ratio is .2.

Finally, suppose we can define a satisfactory level of performance. Individuals whose performance is above that level are considered satisfactory. Those below that level are considered unsatisfactory. Here, line e-e' denotes a satisfactory level of

Figure 1

Testing and Productivity


ON-THE-JOB PERFORMANCE
ok
not ok
s
s'
e
e'
A
B
C
D
not hired
hired
PRE-EMPLOYMENT TEST SCORE

performance and 60 percent of the current employees are working at a satisfactory level (i.e., the base rate is .6).

From an increased productivity viewpoint, the goal is to maximize the success rate -- the proportion of hired individuals who are qualified. Mathematically this can be expressed as the number of individuals in quadrant A divided by the number of individuals in quadrants A+B. A new testing program is effective when its success rate exceeds the current base rate, that is, when the proportion of qualified new hires exceeds the proportion of currently qualified employees.

Success rate will increase as

1. The job becomes less difficult for the applicants. This raising of the base rate can be visualized by moving line e-e' down.
2. Fewer individuals are hired from the applicant pool. This lowering of the selection ratio can be visualized by moving line s-s' to the right.
3. Better tests are used. This use of a test with a higher validity can be visualized by orienting the ellipse more toward 45°.

Of the options, improving validity has the least effect on success rate. Increasing hiring selectivity, i.e., decreasing the selection ratio, has the greatest effect. From a productivity viewpoint, recruitment is far more effective than using a better test.

In Figure 1, the success rate was .78. Different combinations of validity, selection rate, and base rate can result in the same success rate (Taylor and Russell, 1939). Following Linn (1984), Table 1 shows various combinations of selection ratio and validity computed by Taylor and Russell, yielding a success rate of .7, when the base rate is .6.

Table 1

Some Base Rates and Validities Yielding
A Success Rate of .7
(Base Rate = .6)

Selection Ratio	Validity
.10	.15
.20	.19
.40	.29
.60	.40
.80	.65

If only ten percent of applicants are to be hired (selection ratio=.10), even a relatively poor test -- e.g., one with a validity coefficient of .15 -- can lead to an improvement in productivity. On the other hand, if 80 percent of the applicants are to be hired, then a test with a high validity coefficient, .65, is needed to yield the same improvement.

The Taylor and Russell analysis is most applicable where job performance may be classified satisfactory or unsatisfactory (such is the case with many production jobs). By showing how to estimate average job performance level as a function of selection ratio and test validity, Brogden (1949) provided a way to determine utility without making such classifications.

By Brogden's method, the dollar value (U) of increased output attributable to pre-employment assessment is

$$U = N * T * r_{xy} * SD_y * M$$

where

N is the number of workers hired;

T is the average tenure in years;

r_{xy} is the correlation between the predictor and job performance;

SD_y is the standard deviation of performance in dollars; and

M is the mean predictor score of those hired, expressed as a standard score.

N, T, and M are determined by the individual organization. M is a function of the selection ratio: the fewer applicants hired, the larger the value of M. SD_y quantifies on-the-job performance. Hunter and Schmidt estimate SD_y to be 40 percent of the annual wage when better estimates are lacking.

Illustrating Brogden's method is an example of pre-employment screening of budget analysts provided by Schmidt, Hunter, McKenzie, and Muldrow (1979). They estimate the SD_y as \$11,327. If 20 percent of 200 applicants are hired using a test with $r_{xy} = .53$ and the mean tenure is 6 years, then

$$U = (200 * .20\ ) * 6 * .53 * 11{,}326 * 1.40 = \$2{,}017{,}112$$

Schmidt, Hunter, McKenzie, and Muldrow cite this as a big improvement over the utility of using just an interview. With a validity coefficient of .14, the interview would provide a utility of just

$$U = (200 * .20\ ) * 6 * .14 * 11{,}326 * 1.40 = \$532{,}822$$

which has only 1/4 of the utility.

In evaluating his now classic utility formula, Brogden concluded that

1. "A low selection ratio can be as important or even more important than high test validity in achieving savings."
2. "Even a test with very low validity can produce substantial savings if it is possible to select only a small percentage of those who apply."
3. "Even highly valid selection procedures are of little value if nearly all those who apply must be hired."

These conclusions are consistent with those of Taylor and Russell.

For years Brogden's paper was widely recognized for its theoretical value. However, because of difficulty in estimating a value for SD_y, few researchers were able to apply his derivation to actual data. Using recently developed methods to estimate SD_y, prominent researchers F.L. Schmidt and John Hunter have applied Brogden's equation and made rather startling claims about the benefit of pre-employment tests. They provided the example above where productivity increased to $2 million over a six-year period. Hunter (1983) estimated that testing could lead to $15 billion worth of increased productivity per year for the federal government, and with Schmidt (1982), calculated that the gross national product would increase from $80 to $100 billion if improved selection procedures were introduced throughout the economy.

However attractive and appealing, these estimates are not realistic. Levin (1989) asserts that Hunter and Schmidt overgeneralize the applicability of the Brogden formula, use unrealistic estimates of r_{xy} and the selection ratio, and use questionable estimates of SD_y.

Brogden's formula is based on the correlation between the assessment procedure and on-the-job performance. Yet on-the-job performance is often hard to measure. While some studies have used supervisor ratings, a common proxy for on-the-job performance has been paper-and-pencil tests of job knowledge. Levin argues convincingly that using such measures will result in inflated validity coefficients.

Another critic (Cronbach, 1984) calls these projections "a fairy tale." He claims that the projections are based on the untenable assumption that the selection ratio will remain a constant when the formula is applied to large numbers. When one starts to consider the universe of new hires in a given field, however, hiring becomes less selective. While a prestigious company may be able to be highly selective, there is little basis for assuming highly selective hiring when estimating utility across several institutions.

ISSUES

Bias

Test bias often means different things to different people. Flaugher (1978) has shown that the term has been used to refer to differences between groups in average scores, language demand, validity, content relevance, content offensiveness, and selection rates. Two definitions are particularly relevant in employment testing -- differences in validity and differences in selection. Does a particular test predict on-the-job performance of minority applicants relative to white applicants and does it result in unequal hiring rates?

The majority of tests developed by reputable companies do predict job performance equally well for minority and white applicants (Gottfredson, 1988). Little evidence exists that tests are biased using the first definition. Given that test scores of minority applicants are on average below those of whites (Jensen, 1981), the use of an employment test will often result in bias, or unfairness, by the second definition. The selection ratio for minorities will generally be lower than the selection ratio for white applicants.

Employers, then, face two difficult technical and legal challenges: how can they use tests to increase productivity while they strive for greater equity in hiring? and how can they defend their testing program against litigation?

The technical issues were addressed by the National Academy of Science at the request of the Department of Labor. They conducted a thorough, scientific evaluation of a proposed test-based employee referral system based on the Department of Labor's General Aptitude Test Battery.

In their report, Hartigan and Wigdor (1989) evaluated six selection rules:

Raw-Score, Top-Down Selection -- Applicants are selected in order of their scores on the test, from high to low. Use of this rule will result in the highest utility and, given group differences in average test scores, this approach will have the greatest adverse impact on minority group applicants. Employers using this approach should be prepared to demonstrate that they did not have discriminatory intent.

Within-Group Percentile, Top-Down Selection -- a percentile score is computed for each applicant using norms for his or her racial group. Applicants are then selected in order of their percentile scores, from high to low. This method is equivalent to the raw-score, top-down method with a constant added to the scores of minority applicants. Compared to the raw-score, top down method, this will result in a slight loss in utility and substantially increase minority referrals. When this approach was adopted by the U.S. Employment Service for an experimental referral plan, the U.S. Assistant Attorney General for Civil Rights stated that this approach "not only classifies job applicants on the basis of their race or national origin, but... requires job service offices to prefer some and disadvantage other individuals based on their membership in racial or ethnic groups. Such a procedure constitutes intentional racial discrimination." (Reynolds, 1986).

Minimum Competency Selection -- Applicants with a raw score exceeding some cut-score are randomly selected. Of the non-race-conscious rules, this rule results in the highest proportion of minority selections. The utility of this approach is generally much lower than that of other approaches. It is most applicable to jobs where most satisfactory workers have similar performance levels. This approach has been advocated by the Equal Employment Opportunity Commission.

Zone Score, Random Within-Zone Selection -- The test score range is divided into interval zones containing the same number of applicants. All applicant scores within a zone are converted to the same zone score. Applicants are then selected based on their zone scores, top down. Applicants in the lowest acceptable zone are randomly selected. The utility of this approaches decreases as the selection ratio decreases. Minority representation increases negligibly.

Zone Score, Preferential Within-Zone Selection -- This is identical as the Zone Score, Random Within-Zone Selection method except minority applicants in the lowest acceptable zone are selected first. This procedure has the same characteristics as the Zone Score, Random Within-Zone Selection method with a slight decrease in utility and a slight increase in minority representation.

Expected Performance Ratio Selection -- An applicant's test score is converted to an expected level of performance. Hiring is then top-down, based on the expected score. This approach corrects the disadvantage to a minority group caused by a less than perfect match between a test and job performance. The higher the test validity, the closer this method is to the raw-score, top-down method. The lower the validity, the closer this approach is to within-group percentiles.

Regardless of the procedures used, employers incorporating testing in their hiring practices are placed in a difficult position. If they use a color-blind procedure, minorities will often be adversely impacted and the employer may be accused of intentional discrimination. Using a race-conscious procedure may decrease the utility of the assessment and result in charges of reverse discrimination.

Noting problems with each of these approaches, the National Academy of Science has developed a selection policy "that would allow employers to strike an appropriate compromise between the interests of productivity and racial balance in the workforce."

In their interim report, Wigdor and Hartigan (1989) conclude that

> "If the will of society is to pursue both high levels of productivity and a racially balanced workforce and if a valid test that produces adverse impact is used in the referral process, than a race-conscious referral policy is necessary."

The National Academy of Science calls for race-conscious selection, even though the practice is contrary to the nation's efforts to establish non-discriminatory color-blind hiring practices. Thus we must turn to our legal system to provide guidance to the bias issue.

Legal Issues

Since Title VII of the Civil Rights Act in 1964, our legal system has shifted the rules with regard to bias in testing at least three times. Additional shifts are also likely in our nation's continuing struggle to achieve high levels of productivity and a racially balanced workforce. Scharf (1988), Bolick (1988), and Seymour (1988) discuss three landmark events defining the shifts to date:

1. In 1964, Congress defined employment discrimination in terms of "evil intent". Plaintiffs were able to cite disparate impact as evidence of such intent.
2. In 1971, the Supreme Court concluded in *Griggs v. Duke Power Company* that if a test produces adverse impact and is not job related, then it is reasonable to infer that it is being maintained for some other reason. As a result, employers have been compelled to prove that their test predicts a reasonable measure of job

performance and, of the alternatives, that it has the least adverse impact.

3. In 1988, the Supreme Court shifted the burden of proof in *Watson v. Fort Worth Bank and Trust*. Under *Watson*, the plaintiff must specify the criteria that result in adverse impact and the employer must offer a "legitimate business reason" for a testing program. Further, Justice O'Conner emphasized that "employers are not required...to introduce formal validity studies showing that a particular criteria predicts actual on-the-job performances." The Court also ruled that adverse impact precedents also apply to subjective criteria and methods, such as interviews.

An elaboration of the legal issues with regard to employment testing are well beyond the scope of this paper. The interested reader is referred to the December 1988 issue of the *Journal of Vocational Behavior* which was dedicated to the issue of fairness in employment testing. This excellent volume brings into focus the changing nature and importance of the current legal, scientific, and social debate over fairness in employment testing. With regard to race-conscious selection, precedents are presented on both sides of the debate.

Validity Generalization

One of the most impressive and controversial bodies of testing research in recent years was sponsored by the U.S. Department of Labor. In part of it, Hunter and Schmidt claimed that the validity of a test predicting success in some occupations may make the test applicable to a much larger number of occupations than had previously been thought. Using 515 research studies of the General Aptitude Test Battery (GATB) of the U.S Employment Service, Hunter (1983) claimed that the GATB is valid for up to 12,000 different jobs.

This concept of validity generalization can markedly effect an employer's responsibility with regard to test use. Prior to Justice O'Conner's opinion in *Watson*, virtually all employers using a test were expected to conduct local validity studies to ascertain the appropriateness of a test in their situation. With *Watson* and the concept of validity generalization, employers can cite other studies as evidence that their testing program is valid. Under this logic, employers are relieved of the burden of conducting their own validation studies to document the appropriateness of their testing activities. Yet to be resolved are what constitutes a "compelling" body of evidence and to what extent that body of evidence may be generalized to a local situation.

The extent to which validity generalizes is a function of what a test measures and what is involved in the job. A performance test that adequately predicts on-the-job performance of clerical workers in one state, for example, will probably also predict the performance of clerical workers in another state. The jobs do not markedly differ across state boundaries. However, Hunter takes the concept of validity generalization much further: if a massive data base consistently shows a high correlation between a given test and different jobs, then the test is valid for all jobs. In *EEOC v. Atlas Paper Box Company*, Hunter testified that since general intelligence tests are valid for all jobs and since the Wonderlic IQ test is a good measure of general cognitive ability, the test is valid for clerical jobs at the Atlas Paper Box Company.

Although aptitude and intelligence are important in any job -- a fact supported by impressive statistical evidence -- Hunter's conclusions are not totally accepted by the legal and research communities. In *Van Aken v. Young*, the court rejected the concept that a general intelligence test is automatically valid for selecting firefighters, Levin (1989) challenged the evidence used in the original validity generalization studies, and Linn and Dunbar (1986) raised questions about statistical biases. Sackett et al. (1985) claimed that Schmidt and Hunter exaggerated the magnitude, conclusiveness, and policy relevance of their findings; Cronbach (1984) pointed out that variations in validity are far from "minute, decimal dust," as claimed by Schmidt and Hunter.

Nonetheless, despite debate in the research community, the concept of validity generalization has markedly influenced state and federal testing policy. By 1987, the public employment service systems in 37 states were using validity generalization to justify employment tests, thus allowing publishers of commercial tests to claim that validity generalization obviates the need to conduct local validation efforts.

Exaggerated Expectations

Levin (1989) notes the extensive writings on the relationship between various worker attributes and worker productivity. The literature includes

- cognitive dimensions such as verbal and mathematics ability;
- physical attributes such as perceptual skills and strength;

- social/affective characteristics, such as interpersonal skills and temperament; and
- personality traits, such as diligence (Dunnette, 1983; Fleishmann and Quaintance, 1984; and McCormick, 1979).

The best workers are not necessarily the ones with the most skill or knowledge. As the promotional literature for the Wonderlic Personnel Test states:

> "While we may be dazzled by the performance of the exceptionally bright employee and frustrated by the slowness of a dull employee, the real work of an organization is done by those with sufficient mental ability coupled with punctuality, cooperation, leadership, consistency, and persistency."

No assessment program can measure all relevant traits, many of which lack clear definition. In other cases we simply do not have instruments of sufficient quality for testing, and in any event the interplay of traits varies greatly between workers and their jobs. To be sure, tests can be useful prospective instruments, especially when a small percent of the applicants are to be selected, yet tests of human characteristics must always misclassify significant numbers of individuals. (See Figure 1, where many misclassified individuals appear in regions B and D.) Moreover, it is doubtful that many employers understand the conditions under which tests are useful, or that they properly select and use assessment instruments. As we will see below, the problem for employers using screening tests is a matter of quality, quantity, validity, and consideration of required alternatives.

The Matter of Quality

While there are at least 3,000 different tests sold commercially by at least 450 vendors, the objective information about psychological testing available to American companies is quite limited. Notable sources of testing information are the Buros Institute, Test Corporation of America, and the Educational Resources Information Center Clearinghouse on Tests, Measurement, and Evaluation (ERIC/TM). Buros Institute and Test Corporation of American publish extensive descriptions and reviews of commercially available tests (see Mitchell, 1983, 1985; Sweetland and Keyser, 1986; Keyser and Sweetland, 1985-1987). Concentrating on educational tests, the ERIC Clearinghouse prepares a database of published and unpublished literature and offers a range of information products.

Technical reviews of employment tests are available. There are, however, no organizations dedicated to improving employment testing practices. Research in the area is sporadic. Employers seeking objective, balanced information regarding technical, legal, and practical issues do not have a central source for information.

Test Users

In 1988, the American Psychological Association and five other professional associations published the "Code of Fair Testing Practices" (Joint Committee, 1988). Endorsed by major test publishers, the code specified the responsibilities of test developers and users. For the latter it outlined specific responsibilities regarding the selection of appropriate tests, score interpretation, fairness, and notification of test takers.

While test publishers and professional associations do not sanction violators of the code, test users are not held harmless by the courts. As a result of Griggs v. Duke Power, any company administering a psychological test had to demonstrate that the test was valid and necessary to fill a specific job. In 1988, the Supreme Court extended Griggs to interviews and less formal employee testing.

There is little evidence to indicate that users understand their tests or that they are meeting their responsibilities. Even an agency as well respected as the New York State Board of Regents was found to be misusing the SAT (a college admissions test) as the basis for scholarship awards. The court held that scholarships should be based on academic achievement, not aptitude for college.

Publishers' Claims

The testing industry is full of many specialized small companies catering to special markets. It is an attractive, unregulated growth industry: test publishers are given credit when their products support sound employment decisions, and they are usually held harmless when employers make wrong decisions on the basis of tests.

The *New York Times* (Deutsch, 1988) points out that testing is a multi-million dollar industry. While few large companies have revenues in excess of $100 million, many smaller companies nevertheless do very well. London House, Inc., a purveyor of honesty tests, posted sales of $37 million. As test use increases, the future looks bright for the industry.

Much of the promotional literature from larger, well established companies warns of the limitations of all tests, their's in particular.

The literature from smaller, highly specialized companies, however, is often full of exaggerated claims and poor recommendations. For example, in reviewing tests for an educational accrediting agency, this author found incorrect calculations, the use of data from different tests, unjustified (and ridiculously low) recommended passing scores, conflicting statements, improper interpretations of data, and grossly exaggerated claims. Companies without personnel who are trained in testing could easily fall prey to incompetent and dishonest test publishers.

Alternative Assessment Techniques

The Uniform Guidelines on Employee Selection Procedures require employers to investigate and use alternatives to conventional tests. Little guidance, however, is available to help employers evaluate or implement alternatives. The search for viable alternatives has focused on unassembled examinations, biodata banks, assessment centers, reference checks, and interviews.

Unassembled examinations: Unassembled examinations, also called experience and training exams, E&T examinations, and Traex exams, are structured evaluations of an applicant's job-related experiences. Such items as work experience, relevant education, and related achievements are scored. While they are often used to evaluate applicants for white-collar federal and state jobs, Davey (1984) noted that very little research exists on this approach.

Biodata banks: Biodata banks involve the weighted scoring of a wide range of background items that have been empirically shown to relate to performance. While E&T examinations are strictly job-related, biodata banks usually contain a wide range of life history data that are necessarily clearly job-related. The literature strongly supports using biodata (Owens, 1976; Asher, 1972; Reilly and Chao, 1982).

Assessment Centers: Assessment Centers use a variety of work simulations, such as in-basket tests and job-related activities that are scored by multiple raters. Bray, Campbell, and Grant (1974) and Moses and Byham (1977) have found Assessment Centers to be effective for selecting managerial candidates. Davey (1984) however, noted that there is little published research on the validity of Assessment Centers designed to evaluate non-managerial candidates.

Reference Checks: Reference Checks refer to obtaining assessments of previous performance. While reference givers can supply potentially valuable information, negative references are relatively rare. Summarizing the literature, Reilly and Chao (1982) conclude that under most circumstances, this approach is not effective.

Interviews: Interviews can range from an unstructured, non-directed set of questions to a defined set of questions that is administered orally. Recognized as the most widely used method of personnel selection (Arvey, 1979), researchers have consistently concluded that interviews lack sufficient reliability and validity (Wagner, 1949; Mayfield, 1964; Arvey, 1979).

After examining over 170 studies of assessments, Reilly and Chao (1982) concluded that additional research on each of these forms of assessment is needed. Much of the research viewed the different forms of assessment only as alternatives to written cognitive tests. There are very few studies evaluating the potential gain of combining approaches or identifying the circumstances under which different approaches would be most effective.

Honesty Tests

Written and oral tests designed to measure an applicant's honesty (or truthfulness) have long been a popular alternative to the polygraph. Typically composed of 50-100 statements with which the applicant agrees or disagrees, honesty tests are relatively inexpensive ($12 v. $40 for a polygraph) and can be administered by a telephone interview. Bean (1988) reports that approximately 2.5 million honesty tests were administered in 1987. Since the use of the polygraph was prohibited in 1988, honesty tests have become a high growth industry.

While honesty tests predict employee theft as well as cognitive tests predict productivity, they raise a host of ethical issues. They raise the same issues as the polygraph -- a good number of individuals are always misclassified. They also raise questions about what should be permissible in an interview. The increased interest in honest tests may be a leading indicator of decreasing employer confidence in the integrity of American workers.

RECOMMENDATIONS TO BUSINESS

The *Watson* decision suggests that employers should carefully evaluate their hiring practices. Interviews are subject to the same professional standards as formal paper-and-pencil instruments. The questions asked must be job-related and serve legitimate business objectives.

In examining hiring practices, employers should consider the potential of professionally developed and validated assessment procedures. Such properly designed instruments can lead to increased productivity, reduced turn-over, and greater employee satisfaction. Properly implemented, these instruments can withstand legal challenges.

Such instruments, however, will have limited utility for companies struggling to find qualified employees. Companies fortunate to have a large applicant pool, on the other hand, stand to benefit from improved selection procedures. A shrinking labor force will compound the selection problem for everyone.

In order to strike a balance between increased productivity and a racially balanced workforce, selection procedures will have to be race conscious. The Lawyer's Committee for Civil Rights Under Law points out that significant precedents exist for race-conscious hiring practices (Hartigan and Wigdor, 1989, page 50). However, just as racial equity may not be sacrificed for the sake of increased productivity, productivity may not be sacrificed for the sake of racial equity. The two goals are not mutually exclusive, although employers will need to be flexible in establishing and maintaining their workforce.

In order to defend hiring practices against possible litigation, employers should be prepared to document that

1) be it an interview or more formal instrument, the content of the assessment instrument must be related to the job,

2) the instrument serves a legitimate business purpose,

3) the instrument was developed to meet professional standards,

4) application of the instrument meets with professional standards.

Businesses not familiar with these standards should contact the American Psychological Association or the International Personnel Management Association for more information. Businesses lacking measurement expertise should use consultants to help them evaluate the claims of test publishers.

RECOMMENDATIONS TO THE DEPARTMENT OF LABOR

A variety of techniques can be used effectively to help employers assess how well applicants will fit within their organizations. Crowded with vendors of paper-and-pencil tests, the test marketplace has concentrated almost exclusively on that form of assessment. Businesses that are interested in using tests for assessment can readily turn to any of a number of testing companies for vendor advice and information.

However, businesses that want to get information from an objective source and that want to consider other forms of assessment have few, if any, resources available. Consumer-oriented materials are not available and research isn't being conducted. Without federal action, these areas will remain undeveloped.

Research, development, and dissemination activities, in

- understanding current practice
- improving test use
- improving test quality

are recommended. Activity in the first two areas will improve testing practice in American businesses and promote better use of existing instruments. Activity in the third area will address quality and improve the methodology of testing. Contracts, grants, regional technical assistance centers, and a central information clearinghouse are envisioned. This clearinghouse would build a bibliographic database of contract reports, conference papers, planning documents, validation studies, and other unpublished reports and make them available to business. The clearinghouse would proactively disseminate concise, clearly written information regarding testing practices. In short, the clearinghouse would serve as a central source of quality information concerning employment testing.

Understanding Current Practice

Aside from occasional small surveys by professional associations and journalists, there is little hard data about current testing practices. Efforts to improve practice through testing must begin with answers to questions about test use: how many and what types of tests are given annually? what types of tests are given? what are employer attitudes toward these tests? are they being used properly?

There is, then, a need for both large scale surveys and intensive case studies. Large scale studies can provide basic non-evaluative and descriptive information. Case studies stemming from the large scale surveys can help identify cause and effect relationships and identify areas requiring concentrated effort.

Improving Test Use

Activity in this area is needed to improve the ability of employers to use tests and their results appropriately. Material describing test selection, use, and evaluation should be developed and offered to American businesses. Applied research studies focusing on test selection and interpretation are also strongly recommended. Specific topics include

- making test information available and useful to employers
- identifying problems in using tests
- applying validity generalization
- identifying job requirements
- evaluating test utility
- establishing standards
- selecting employees and establishing equity
- addressing legal issues in employment testing
- using computers and testing
- providing feedback to applicants
- developing and documenting company-prepared tests

Improving Tests

Activities in this area will contribute to the development of new methods of assessing job potential. Research on alternative assessment techniques, interviewing practices, and test methodology is strongly recommended. Specific topics include

- creating and using job simulations
- targeting interviewing

- improving the diagnostic value of tests
- improving test efficiency
- assessing unskilled labor

REFERENCES

American Psychological Association (1974) Standards for Educational and Psychological Tests and Manuals. Washington, DC: author.

American Psychological Association (1986) Standards for Educational and Psychological Tests and Manuals. Washington, DC: author

Arvey, R.D. (1979) Unfair discrimination in the employment interview: Legal and psychological aspects. *Psychological Bulletin*, 86, 736-765.

Asher, J.J. (1972) The biographical item: Can it be improved? *Personnel Psychology* 25, 251-269.

Bean, E. (February 27, 1987) More firms use 'attitude tests' to keep thieves off the payroll. *Wall Street Journal*, 37.

Bray, D.W., Campbell, R.J., & D.L. Grant (1974) Formative years of business: A long term study of managerial lives. New York: Pergamon.

Bolick, C. (1988) Legal and Policy Aspects of Testing, *Journal of Vocational Behavior*, 33, 320-330.

Brogden, H.E. (1949) When testing pays off. *Personnel Psychology*, 2, 171-183.

Brogden, H.E. (1951) Increased efficiency of selection resulting from replacement of a single predictor with several different predictors, *Educational and Psychological Measurement*, 173-195.

Cronbach, L.J. (1980) Selection Theory for a Political World, *Public Personnel Management*, 9,1, 37-50.

Cronbach, L.J. (1984) Essentials of Psychological Testing, New York: Harper and Row, fourth edition.

Davey, B.W. (1984) Personnel testing and the search for alternatives, Public *Personnel Management Journal*, 13, 4, 361-374.

Deutsch, C.H. (1988) A mania for testing spells money, *New York Times*, October 16, p.4.

Dunnette, M.D. (1983) Aptitudes, abilities, and skills. In M.D. Dunnette (ed) Handbook of Industrial and Organizational Psychology, New York: John E. Wiley and Sons, 473-520.

Equal Employment Opportunity Commission (1978) Uniform Guidelines on Employee Selection Procedures, *Federal Register* 43, 116, 38295 - 38309.

Flaugher, R.L. (1978) The many definitions of test bias. *American Psychologist*, 33, 7, 671-679.

Fleishman, E. & M. Quaintance (1984) Taxonomies of human performance, New York: Academic Press.

Ghiselli, E.E. (1973) The validity of aptitude tests in personnel selection, *Personnel Psychology*, 26, 461-477.

Gottfredson, L.S. (1988) Reconsidering fairness: A matter of social and ethical priorities, *Journal of Vocational Behavior*, 31, 3, 295.

Griggs v. Duke Power Co (1971) 401 U.S. 424.

Hartigan, J.A. and A.K. Wigdor, eds (1989) *Fairness in Employment Testing: Validity Generalization, Minority Issues, and the General Aptitude Test Battery*, Washington, DC: National Academy Press.

Hunter, J.E. (1980) Validity Generalization for 12,000 Jobs: An application of synthetic validity and validity generalization to the General Aptitude Test Battery (GATB). Washington, DC: U.S. Employment Service, U.S. Department of Labor.

Hunter, J.E. (1983) The economic benefits of personnel selection using ability tests: A state of the art review including a detailed analysis of the dollar benefit of U.S. employment service placements and a critique of the low-cutoff method of test use. Washington, DC: Employment and Training Administration, U.S. Department of Labor.

Hunter, J.E. & F.L. Schmidt (1982) Fitting people to jobs: The impact of personnel selection on national productivity. In E.A. Fleishman & M.D. Dunnette (eds) Human Performance and Productivity: Vol 1 Human Capability Assessment. Hillsdale, NJ: Erlbaum.

Hunter, J.E. & F.L. Schmidt (1983) Quantifying the effects of psychological interventions on employee job performance and work force productivity. *American Psychologist*, 38, 473-478.

Jensen, A.R. (1980) Bias in Mental Testing, New York: The Free Press.

Joint Committee on Testing Practices, Code of Fair Testing Practices, Washington, DC: author.

Keyser, D.J., & R.C. Sweetland, eds., (1985-1987) *Test Critiques*. Kansas City, MO: Test Corporation of America, Volumes I-VI.

Levin, H. (1989) Ability testing for job selection: Are the economic claims justified? In B. Gifford Testing and the Allocation of Opportunity, Boston: Kluwer Academic Publishers, in press.

Linn, R.L (1982) Ability testing: Individual differences and differential prediction. In Ability Testing: Uses, Consequences, and Controversies, part II. Washington, DC: National Academy Press 335-388.

Linn, R.L. & S.B. Dunbar (1986) Validity generalization and predictive bias. In R.A. Berk (ed) Performance Assessment: Methods and Applications. Baltimore: Johns Hopkins Press.

Mayfield, E.C. (1964) The selection interview: A re-evaluation of published research. *Personnel Psychology*, 17, 239-260.

McCormick, E. (1979) Job analysis: Methods and Applications. New York: AMA-COM.

Mitchell, J.V., Jr. (ed.), (1983) *Tests in Print III (TIP III): An Index to Tests, Test Reviews, and the Literature on Specific Tests*. Lincoln, NE: Buros Institute of Mental Measurements, University of Nebraska Press

Mitchell, J.V. Jr. (ed.) (1986) *The Ninth Mental Measurement Yearbook.* Lincoln, NE: Buros Institute of Mental Measurements, University of Nebraska Press

Owens, W.A. (1976) Background data. In M.D. Dunnette (ed) Handbook of Industrial and Organizational Psychology, Chicago: Rand McNally.

Reilly, R.R. & G.T. Chao (1982) Validity and fairness of some alternate employee selection procedures. *Personnel Psychology* 35, 1-62.

Reynolds, W.B. (Nov 10, 1986) Memorandum to the Director of the U.S. Employment service. Cited in Wigdor, A.K. and J.A. Hartigan, eds., (1988) Interim Report: Within Group Scoring of the general Aptitude Test Battery, Washington, DC: National Academy Press.

Sackett, P.R., Schmidt, N., Tenopyr, M.L., Kehoe, J., & S. Zedeck (1985) Commentary on forty questions about validity generalization and meta-analysis. *Personnel Psychology*, 38, 697-798.

Schmidt, F.L. & J.E. Hunter (1981) Employment testing: Old Theories and new research findings, *American Psychologist*, 36, 1128 - 1137.

Schmidt, F.L., Hunter, J.E., & K. Pearlman (1981) Task differences as moderators of aptitude test validity in selection: A red herring, *Journal of Applied Psychology*, 66, 2, 166-185.

Schmidt, F.L., Hunter, J.E., & K. Pearlman (1982) Assessing the economic impact of personnel programs on work force productivity, 35, 333-347.

Seymour, R.T. (1988) Why Plaintiffs' Counsel Challenge Tests, and How They Can Successfully Challenge the Theory of "Validity Generalization", *Journal of Vocational Behavior*, 33, 331-364.

Sharf, J.C. (1988) Litigating Personnel Measurement Policy, *Journal of Vocational Behavior*, 33, 235-271.

Society for Industrial and Organizational Psychology (1987) Principles for the validation and use of personnel selection procedures, Third edition, College Park, MD: author.

Sweetland, R. C. and D.J. Keyser, eds., (1986) *Tests: A Comprehensive Reference for Assessments in Psychology, Education, and Business (2nd ed.)*. Kansas City, MO: Test Corporation of America

Taylor, H.C. & J.T. Russell (1939) The relationship of validity coefficients to the practical effectiveness of tests in selection: Discussion and Tables. *Journal of Applied Psychology*, 23, 656-578.

Wagner, R. (1949) The employment interview: A critical review. *Personnel Psychology*, 2, 17-46.

Wigdor, A.K. and J.A. Hartigan, eds., (1988) Interim Report: Within Group Scoring of the general Aptitude Test Battery, Washington, DC: National Academy Press.

Wonderlic & Associates (1982), Validity of the Wonderlic Personnel Test, author.

41. FUNCTIONAL CONTEXT EDUCATION: POLICY AND TRAINING METHODS FROM THE MILITARY EXPERIENCE

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Applied Behavioral & Cognitive Sciences, Inc.

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41. FUNCTIONAL CONTEXT EDUCATION: POLICY AND TRAINING METHODS FROM THE MILITARY EXPERIENCE

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Today there is widespread concern that the educational and intellectual quality of our nation's workforce does not meet the needs of the workplace. The Commission on Workforce Quality and Labor Market Efficiency identified two groups of individuals whose education and skills may render them suitable for only the lowest skilled and paying jobs.

> "The first group consists of those who leave the education system, mostly as dropouts, without acquiring basic language and mathematics skills. Having very limited labor market opportunities, these individuals are likely to find their way into the welfare system or the underground economy. The second group has no marketable job skills beyond basic language and mathematics. They have limited labor market opportunities unless they receive additional training through schools, employers, or government training programs. This group includes young workers, just out of school, as well as experienced workers whose skills may have become obsolete" (Department of Labor, 1989, pp. 1-2).

Focus on "Second Chance" Education

The Commission on Workforce and Labor Market Efficiency has a special interest in "second chance" education and training systems that might be useful to those youth and adults in the two groups described above. They have left the elementary and secondary schools without having attained high levels of ability in skills such as reading and mathematics. It is important to understand how they fare in the world of work, and what kinds of education and training opportunities can best serve their needs.

The Military Experience

In the last twenty-five years there have been two times when the military services of the United States have had to utilize youth whose abilities fit the descriptions of the groups identified above. During the mid-1960s the Department of Defense, as a matter of policy, lowered its standards for entrance on the Armed Forces Qualification Test. From 1966 through 1971, over 300,000 young adults were enlisted who would have been rejected for low literacy and mathematics abilities.

The second time the military had to utilize lower aptitude young adults was during the period from 1976 through 1980. During this period, a mistake in the calibration of the Armed Services Vocational Aptitude Battery resulted in the accession of over 350,000 people whose aptitude scores would have rendered them ineligible for service if the proper norms had been used. Across the four services in fiscal year 1979 whereas it was thought that there was only five percent of enlistees in the lowest category of aptitude permitted to enlist, there was actually thirty percent.

Studies of "Cast-off Youth". Though the armed services have been the largest "employer" of young adults with lower levels of basic skills, most manpower policy has been made without the insights from the military's experience with youth cast off from school and work. Thus, up until recently, conclusions were drawn about the capabilities of lower aptitude, less literate young people without benefit of the findings from numerous military studies of the training, job performance, and general acceptability of lower ability youth.

To remedy this situation, in 1983 the Ford Foundation sponsored research to analyze the military's use of lower aptitude youth (Sticht, Armstrong, Hickey, & Caylor, 1987). More recently, the National Commission on Testing and Public Policy, also sponsored by the Ford Foundation, supported the preparation of additional analyses of the military's utilization of less literate, lower aptitude enlistees (Sticht, 1989).

Purpose of the Present Paper

The present paper provides a synthesis of the foregoing works. It presents an overview of the military's experience with personnel whose aptitude scores are within the range from the 10th to the 30th percentiles on the Armed Forces Qualification Test (AFQT). This makes-up the group referred to as category IVs by military manpower management. Individuals in category IV on the AFQT are considered to be "below average" in trainability. Their scores are roughly comparable to intelligence scores within the range from 70 to 91, which is two-thirds to two standard deviations below the average intelligence quotient (IQ) of 100.

Individuals in category V, in the percentile range from 0 to 9, with an intelligence score range below 69, are considered to be "well below average" in trainability, and are prohibited from enlistment by law (Sticht, et al., 1987, pp. 21-24).

This paper has four parts:

Part 1, The Military Performance of Lower Ability Youth, summarizes the record of performance of category IV personnel in the mid-1960s, when they were admitted by policy, and again in the late 1970s when they were admitted by mistake. The major question here is, how well did these people perform in training and on the job?

Part 2, Accommodating Lower Ability Youth, summarizes strategies that the military uses to cope with the demands on the training and education system caused by lower ability, young adults. Attention is given to the role of the military as a "motivating context" that might account for much of the success of these "at risk" young adults.

Part 3, Functional Context Education, summarizes a line of research and development conducted to develop better methods of training and educating lower ability personnel. Examples of the transfer of principles and methods of what has been called **"functional context education"** (Sticht, et al., 1987; Sticht, 1987) from military contexts to civilian settings are given.

Part 4, Implications for Human Resources Development, discusses suggestions for policy and practice resulting from the results of the military experience with lower ability, "at risk" young adults.

The Military Performance of Lower Ability Youth

This section summarizes the performance of lower ability personnel in the mid-1960s and during the misnorming period from 1976 through 1980.

Project 100,000

During the mid-1960s, as a part of President Johnson's "War on Poverty," Secretary of Defense Robert S. McNamara initiated Project 100,000. In this program, the services lowered their standards on the Armed Forces Qualification Test, which measures reading and mathematics abilities, and accepted up to 100,000 personnel per year who would have been rejected under earlier standards.

To determine how well the Project 100,000 personnel performed, an extensive data collection procedure was established. Detailed records were kept on how well the Project 100,000 personnel performed in training and on the job. Additionally, records were maintained for a "control" or comparison group made-up of non-Project 100,000 personnel. The latter included personnel in categories I (well above average in trainability, percentiles 93-100), II (above average, percentiles 65-92), and III (average, percentiles 31-64), in addition to some category IV personnel who were admitted under the old standards because they had scores on supplemental tests that qualified them for service.

Demographics. As a group, the Project 100,000 men (no women were included) had the demographic characteristics of the "culture of poverty." Over half had been without a job or had been working for under $60 per week, a level consistent with poverty levels of the time (1966-1971). About ten percent had one or two civil court convictions. Less than half (46.9%) were high school graduates, and their median reading level was at the sixth grade. Thirty-six percent were black, and almost half the group, particularly the blacks, came from the southern states.

Performance. Figure 1 summarizes the training and job performance of Project 100,000 personnel in relation to a control group of average and above average aptitude personnel in the Army. It should be noted that about two-thirds of the Project 100,000 personnel entered the Army, which is traditionally the recipient of greater numbers of low-aptitude personnel during a general mobilization.

Figure 1 shows that 94 percent of Project 100,000 personnel completed **basic military training**, and 94 percent required no recycles (repetition of one or more weeks of training). This compares to 98 percent for controls.

In **job technical skills training**, 86 percent completed training, and 92 percent required no recycles. Again, this compares favorably to the rates for controls.

A major indicator of military usefulness is **completion of the tour of duty** or its converse, attrition. Overall, 84 percent of Project 100,000 and 92 percent of control personnel completed 13 to 24 months of service, which is the period reported by Department of Defense records on Project 100,000.

Over ninety percent of both Project 100,000 and controls had **supervisor's ratings** in the "above average" range, suggesting that the overall performance of Project 100,000 men was acceptable to supervisors. A special study in the Air Force showed that category I men were rated at an average of 7.97 on a nine point scale, while the lowest group of category IV men were rated at 7.04, less than one score difference between the highest and the lowest aptitude groups on the scale (Sticht, 1989, p. 35).

The final indicator of performance, **paygrade achieved**, shows that Project 100,000 personnel did not make rank as rapidly as non-Project 100,000 personnel. At the end of 19 to 24 months of service, only 67 percent of Project 100,000 achieved a paygrade of E-4 (lowest supervisor's rank), contrasted to 82 percent of higher ability personnel.

Summary of Project 100,000. Overall, the Project 100,000 personnel did not perform as well as average or higher ability personnel. On the other hand, it should be noted that over 80 percent completed their tour of duty and more than 90 percent were rated above average in their service. This from a group that had been totally cast off from military service because it was said that they were too limited in basic reading and mathematics skills to be "trainable."

The ASVAB Misnorming

From January 1976 through September 1980 the tables for converting raw scores on the Armed Forces Qualification Test of the Armed Services Vocational Aptitude Battery (ASVAB) were in error. This permitted the enlistment of almost 360,000 young men with aptitude test scores below the minimum standards of the time (Eitelberg, 1988, pp. 73-74).

When the mistake was discovered, studies were conducted to find out how well the "potentially ineligibles- PIs" as they were called - had performed. Table 1 shows data from Greenberg (1980) for Army PIs (the Army received over 200,000 of the PIs). The table compares the performance of the PIs on six different indicators of performance to personnel fully eligible (non-PIs) at the other aptitude categories of the AFQT.

The table indicates that the PIs very much resembled average aptitude, qualified troops (mental categories IIIA and IIIB) on first term attrition, achievement of paygrade E4, and attrition in skill training (job technical training).

On the Skill Qualification Tests (SQT) the PIs performed more poorly. This is a consistent finding: lower ability personnel perform more poorly when tested on paper-and-pencil and hands-on tests than do higher ability troops. However, the SQT performance of the PIs in this case did not differ too much from the performance of qualified category IIIB personnel. Furthermore, in terms of first term retention, that is, those who were reenlisted for a second term, the PIs tended to be acceptable and to reenlist at a higher rate than the other aptitude categories.

Other studies of Navy PIs indicated that they had an attrition rate in the first tour about 10 percent higher than average ability sailors and they achieved paygrade E4 at a lower rate than average (42 percent versus 44-46 for IIIBs and IIIAs) (Cory & Booth-Kewly (1986)).

Work by Ramsberger & Means (1987), summarized in Sticht (1989) compared PIs to personnel qualified in the category just above that of the PIs in relation to completing 36 months of service, paygrade achieved, and eligibility for reenlistment. They looked at these relationships in low and high complexity jobs across the Army, Navy and Air Force. Over all, there were no consistent effects of job complexity on the differences between PIs and controls. In seven of the 18 comparisons of PIs and controls the PIs performed as well as or better than the controls. In seven comparisons, the controls surpassed the PIs by only one to four percentage points. The four cases in which the control and PI differences exceeded 10 percent were all in the Air force, and concerned the completion of the first term and eligibility for reenlistment.

In summarizing the studies of PIs as of 1987, the Department of Defense's Director of Accession Policy stated that "...a quarter-of-a-million people who did not meet the enlistment standards and should not have been able to do the job did in fact do it pretty well" (Sellman, 1987, p. 420).

Discussion

Project 100,000 was a publicly announced program to involve the military in a social welfare program, Johnson's War on Poverty. As such, it was highly criticized as an unwelcome intrusion into the manpower management of the military, and it was widely expected that the program would fail. The Army Times editorialized: "Are the services likely to get any reasonable mileage from such people? Past performance indicates not...Is this any time to require the services to take on a large scale "poverty-war" training mission? We would think not. The services more than have their hands full with the fighting war" (Sticht, et al., 1987, p. 15).

Two decades later, the Navy Times of February 25, 1985 referred to Project 100,000 as "...the infamous effort of a generation ago..." and goes on to state that the Chief of Naval Operations wanted to do something in the Navy to help improve the sorry state of education of many enlistees. While the CNO did not know precisely what he wanted to do, he knew what he did not want...he did not want another Project 100,000 which "...is almost universally remembered by military people as a disaster that caused the military services tremendous grief."

This comment was made in the Navy Times in 1985 even though, unbeknownst to everyone, the services had had "another Project 100,000" in the misnorming episode. But in this case there was no loud hue and cry. And, even when the incident had been discovered, and the analyses of performance summarized above completed, the Director of Accession

Policy concluded that the Potentially Ineligibles had, on the whole, performed satisfactorily.

Given the latter findings, and the data that showed that, contrary to expectations, the Project 100,000 people performed satisfactorily as a group, it might have been expected that the policy of excluding hundreds of thousands of young adults from military service might have been reversed. But it was not. Instead, standards were immediately raised, and a request for more millions of dollars to recruit higher quality personnel was made by the military and accepted by the Congress.

An implication of the military's experience with lower aptitude personnel in these two time periods is that similar attitudes may be held by civilian organizations. If we declare large numbers of the citizenry "functionally illiterate," we may cause needless abandonment of many youth and adults, and the proliferation of programs of "second chance" and "remedial" education that are not genuinely needed. The assignment to such programs of millions of youth and adults might undermine their self concepts, and contribute to a reduction in their motivation to seek work, and to pursue programs of education and training that contribute to genuine needs. This may account, in part, for the fact that many eligible adults do not pursue adult literacy education, and over half of those that do quit before completing their objectives (Sticht, 1988).

Accommodating Lower Ability Youth

The military has four strategies that it has used to cope with the strain on the training and education system that is caused by the mobilization of large numbers of lower ability recruits. The choice of which of these four strategies will be used most often roughly follows a "principle of least effort." That is, the less investment in money, time, human and material resources a strategy requires, the more likely it is to be used.

Ordered from least to most difficult to implement, the four strategies are:

(1) **limited assignments**, in which lower ability recruits are assigned to less cognitively demanding jobs with their less demanding training requirements;

(2) **provision of extra help and time**, in which instructors or buddies coach or otherwise help the person learn something; extra study time is offered in the evenings; or students are set-back or "recycled" one or more weeks;

(3) **revision of training courses**, in which parts of or entire courses may be revised with respect to content or methods to make difficult segments of instruction or entire courses more learnable; and

(4) **establishment of special training units**, in which personnel are removed from their regular unit and sent to remedial literacy training.

Payoff of Each Strategy

Project 100,000 made use of each of these four strategies to accommodate the hundreds of thousands of lower ability recruits. Although it is not possible to know for certain how much each strategy contributed to the success of the program, it is possible to make an estimate.

Data for Project 100,000 show that 86 percent of the Project 100,000 men were assigned to just four of the nine Defense Department occupational areas, with the largest number (36 percent) going to occupational area 0: Infantry, Gun Crews, Seamen, all combat-oriented jobs typically rated less cognitively demanding. This suggests that a large amount of the Project 100,000 success was attributable to the strategy of limited assignments.

The recycling strategy had less impact, with only 6 percent of the Project 100,000 recruits being recycled in basic training and 8 percent in job technical skills training (Figure 1).

Regarding course revisions, Greenberg (1969), the Director of Project 100,000, reported revisions in some 50 courses by 1969, with most changes leading to simplification of materials, deletion of theoretical, abstract content, and an increase in hands-on instruction.

Some 50,000, or about 15 percent of the Project 100,000 recruits who completed their tour of duty were assigned to special training units for remedial literacy.

By this accounting, because the strategy of limited assignment was the only one that directly affected most of the Project 100,000 personnel, it is probably the strategy that contributed most to the success of Project 100,000. Extra help and time, and course revisions, in that order, follow limited assignments in the amount of impact on Project 100,000. Remedial literacy training may have helped a little, but evaluations of the effects of literacy training revealed only minimal, if any impact on the performance of the Project 100,000 personnel (Fisher, 1971).

The Misnorming Incident. No data have been found that analyze the occupational assignments, recycle rates, and remedial training of the PIs. One study sorted PIs and eligibles by high, medium, and low demanding jobs, and found that the largest number of both PIs and eligibles were in lower demanding jobs (Means, Nigam, & Heisey, 1985). There were no differences, however, between the numbers of PIs and eligibles in the three categories.

The Military as a Motivating Context. To an unknown degree, the success of lower ability personnel in the military may reflect the fact that military service motivates such success because it is a **legally binding** contract with serious penalties for failure to perform; it is **recognized and socially approved service**; and it provides the service member with a large amount of **social capital** (peer recognition; group morale and cohesion; family and community support; and so forth) (Coleman & Hoffer, 1987) within both military and civilian contexts.

The influence of the military context may account for why over four out of five Project 100,000 recruits had completed an average of 18 months of service (figure 1) at the time the data were collected, while only about one in five Job Corps participants, who have backgrounds similar to the Project 100,000 men, remain in the program for a year or more (Levitan & Gallo, 1988, p. 134).

While only skimpy data are available, follow-up studies of Project 100,000 veterans indicate that they had completed additional schooling and they were earning slightly more than a non-veteran comparison group. Further, for some 8200 Project 100,000 men who stayed in the military for a career, their average AFQT scores were higher than at entry, and they had completed more years of education.

These data suggest that both in and out of the military, many lower aptitude men who had been "cast off" from society performed satisfactorily and became productive members of society.

Functional Context Education

Before, during, and after Project 100,000, military human resources research laboratories conducted research to develop training and education methods and programs that would be especially useful for lower ability personnel. One line of research in both technical training and education was conducted under a more or less loosely conceived concept called "functional" training.

Within the sphere of technical training, the concept was dubbed the "functional context method" by Shoemaker (1960). Within the sphere of education, the focus was on literacy programs, and during World War II the approach was called "functional" literacy training (Goldberg, 1951).

Many years before the World War II functional literacy programs and the postwar technical training studies, principles similar to those later called "functional context education" appeared in almost modern terms in a book by Fox, Bish, and Fuffner (cited in Johnson, 1951). Briefly, these principles included relating new instruction to old; making curriculum sensible by justifying topics and applying theory; focusing on purpose by providing immediate and explicit objectives;

assisting learning by creating a hands-on environment; supporting topics only as needed and (where appropriate) using actual equipment; limiting memorization by associating topics with practical applications, and organizing units of study into meaningful subunits organized around a whole.

To be "functional," therefore, instruction should build new knowledge on old knowledge; the instruction should be meaningful in terms of the learner's knowing both what is to be learned and why; and learning should be facilitated by limiting rote memorization and, instead, relying on understanding by presenting a "whole-to-part" organization of learning units, rendered more rememberable through practical applications.

Functional Context Technical Training

From the 1950s into the early 1970s, several research studies were conducted by the Army and Navy that attempted to apply the foregoing concepts to military technical training. These studies are summarized in Table 2.

In all of the courses, achievement was improved over that of "conventional" courses. Where measures were appropriate, both attrition (dropouts) and training time were significantly reduced.

As a part of Project REPAIR, Harry Shoemaker (1960) articulated the case against the traditional approach to teaching electronics maintenance, criticisms that hold for many electronics technicians courses today (Sticht, et al., 1987, chapter 10). The points Shoemaker made include:

1. The conventional approach fails to provide the learner with a meaningful and relevant context for learning novel and abstract material.

2. The abstract, unfamiliar material of basic electronics is unstimulating when taught out of context.

3. The conventional sequence forces the learner somehow to retain the knowledge of basic electronics until that knowledge is applied later in the course.

4. The "part-to-whole" sequence of the conventional approach directly conflicts with the "whole-to-part" sequence of trouble shooting, and this conflict may hinder the learning of troubleshooting skills.

In the "part-to-whole" approach that Shoemaker criticizes, students first learn about electricity as atoms, electrons, etc., and they study resistors, condensers, and so forth as "parts." Later, when actually working on real equipment, they start with the "whole" equipment and then figure out which "parts" are malfunctioning. The "part-to-whole" approach proceeds in the opposite manner from the way an electronics technician actually works, and, as their research showed, that approach does not result in technicians who are as good as those trained using the intact equipment first and then decomposing it systematically into parts.

Shoemaker's (1960) outline of the main features of the functional context method, as he called it, are reproduced verbatim.

"1. A meaningful and relevant context is provided for the learning of novel and abstract material. This is believed to be particularly beneficial in the learning of basic electronics principles which are taught within the contexts of equipment function and maintenance.

2. The use of relevant and functional contexts for instruction lessens the need for analogies and other materials of questionable relevance used in the conventional sequence to bridge the gap between novel material and the student's past experience.

3. The "whole-to-part" sequence of topics makes possible a close integration of basic electronics with troubleshooting, increasing its utility for the repairman.

4. The possession by the learner of relevant and meaningful functional context encourages questioning and problem-solving attitudes, which enhance motivation for the learning of new material. Knowing the function of a circuit stimulates one about the way the function is accomplished.

5. The method contains safeguards against inclusion of topics that lack functional significance. The relevance of a topic is readily judged when it is viewed in relation to established functional contexts. For example, knowledge of the internal functioning of detailed electronics parts such as resistors and capacitors can be regarded as superfluous when it is realized that such knowledge plays little if any role in troubleshooting and repair.

6. The use of troubleshooting-oriented contexts for instruction makes it possible to represent the job situation realistically in

training in terms of duties, types of maintenance problems, and equipment items encountered."

The "functional context method" that Shoemaker developed over thirty years ago is elaborated here because of (1) its relevance to training lower ability learners in technical areas, and (2) it predates and undergirds the considerable body of literature that is emerging under the banner of contemporary cognitive science, including artificial intelligence. For instance, concepts of "situated learning,"and "cognitive apprenticeship" present arguments for the importance of learning within the "functional context" to which the learning is to be applied (Gott, 1988, p.163). This is necessary, it is argued, because "Classroom tasks...can completely fail to provide the contextual features that allow authentic activity" (Brown, Collins, & Duguid, 1989).

Though much of the contemporary work in cognitive science is consistent with the work on the functional context method in the military human resources laboratories during the 1950s, 1960s, and early 1970s, it is often expressed in terms that do not communicate well to "common people." In the military research, a project to improve training in the Army's Radio Operator's School was accomplished following the "principle of functional context." The researchers provide a very down-to-earth explanation of this principle:

> "This principle is a general method of sequencing training content so that the intended use of new instructional material is established for the student

> prior to the introduction of new material itself. The principle follows from the fact that a trainee can learn and retain best those new things that he can tie in with something he already knows. Ancillary to the principle of functional context are certain working rules: Go from the concrete to the abstract; go from the specific to the general; go from practice to theory; go from the familiar to unfamiliar. The nature of the objective to be attained will determine which formulation is chosen."
>
> "...Many courses that are not organized this way are successful, because many trainees bring contexts with them that are already adequate, although not always the most appropriate for the material to be learned. As material becomes more novel, such fortuitous contexts rapidly become inadequate for the material, and an effort must be made to provide more adequate contexts" (Goffard, Polden, & Ward, 1970, p. 5).

Through the application of the functional context principle to the Radio Operator's course, the recycle rate for trainees was reduced by 30 percent in comparison with the standard course, and attrition was reduced by about 50 percent. These outcomes were achieved even though the functional context classes were 40 percent larger and contained twice as many Category IV personnel as the standard course.

Functional Context Literacy Training

Planners for Project 100,000 had anticipated that the lower ability personnel might require remedial literacy training. For this reason they recommended that requirements for literacy training be delineated and that educators "...integrate needed literacy training into the [job] skill training or during off-duty hours" (Sticht, et al., 1987, p. 88).

This recommendation led the military services to develop special training units for remedial literacy training similar to those Special Training Units that had been developed for training "functional literacy" in World War II. However, unlike the case during World War II, in which reading, writing, and arithmetic were taught within the context of military life, using the famous Private Pete and Sailor Sam series, the literacy programs put in place during the mid-1960s were "decontextualized" from military life. Instead, they were based on academically-oriented materials to permit progress through the grade levels toward a high school equivalency degree, the General Education Development (GED certificate).

FLIT: The Functional Literacy Program. Though the operational literacy programs put into place immediately upon the initiation of Project 100,000 in 1966 were "academic" and not "functional" in nature, research and development projects were initiated that eventually resulted in changing Army remedial literacy programs into functional, job-related programs (see Sticht, et al., 1987, Chapter 9 for an extended discussion of the World War II and other functional literacy programs discussed here).

The Army's **Functional Literacy** program was oriented in the direction recommended by the Project 100,000 planning group. That group had recommended that literacy and job technical skills training be integrated. The FLIT program accomplished this integration, at least to a large degree, though not completely, by using the reading materials found in Army job training and on the job to teach reading.

In research to study the reading demands of several Army career fields, it was found that most reading could be described as either **reading-to-do** something, such as locate information using tables of contents, indexes, or the bodies of manuals, or **reading-to-learn** something, such as studying course materials to take the end of week examination.

In the FLIT curriculum, materials were developed for Cooks, Combatants, Automotive Mechanics, Medical Corpsmen, Clerks, and Communications Specialists. The materials taught reading-to-do and reading-to-learn skills using these job-related materials. Thus, in addition to acquiring needed **information processing skills** students acquired **knowledge** needed to read and comprehend their job materials.

For the most part, the FLIT program was offered in the special training units that had been established at the outset of Project 100,000. However, special studies were carried out in which the job-oriented training was offered at the technical training school In one research project, the job-related literacy training was offered in after duty hours, as the Project 100,000 management group had recommended. This was called the FLIT Extended Day project.

A second project incorporated the job-oriented literacy training into the training day itself, thus actually integrating literacy and job skills training as the Project 100,000 management group had recommended. However, by the time this research was conducted, in the early to mid-1970s, Project 100,000 was over, the draft had been abolished, and the All-Volunteer Force was underway.

Operationalizing FLIT. With the advent of the All-Volunteer Force, there was concern that many volunteer recruits would require basic skills training. The Army thus disseminated the FLIT program to Army training centers at Forts Ord, Knox, Jackson, Polk, Leonard Wood, and Dix. The name was changed to Advanced Individual Preparatory Training (AITPT) and offered as a three to six week add-on to the beginning of Advanced Individual Training, as job skills technical training was called.

FLING and JORP. In the mid-1970s, Army National Guard officials sponsored the development of FLING: Functional Literacy for the National Guard based on the FLIT job-related basic skills training approach. During this same time period, the Air Force sponsored JORP: Job-Oriented Reading Program that was also based on the FLIT approach.

Figure 3 shows pre- and post-test scores on general reading and job-related reading task tests developed using the FLIT approach. Data are presented for the six Army sites where FLIT/AITPT was implemented; for the FLIT experimental Extended and Integrated Training Day programs; and for FLING and JORP.

Additionally, at the top of the figure, data are presented for a No Literacy Training group, consisting of Army Automotive Mechanics who were tested on both general and job-related reading before and after attending mechanics (not literacy) technical training. These data show that simply attending technical training may make significant improvements in both general and job-related reading.

Data from two general literacy programs that did not offer job-related literacy training are given, for the Air Force and the Army. The Air Force program was 13 weeks in duration, in contrast to the three to six week Army program. The data for these general literacy programs show that they did not make much improvement in job-related reading, which was the goal of the military's literacy training programs.

Overall, the data of Figure 3 confirms that students in job-related reading programs made more growth in job-related reading than in general reading ability. However, they made as much gain in general reading as did those in the general reading courses (for Army personnel). This is of interest because it demonstrates that job-oriented literacy training pays off in making people more competent with job materials, while it also generalizes to more generally available materials, too.

"Spin-off" From FLIT. Figure 2 shows a number of military literacy projects that resulted from the FLIT work. The already mentioned Air Force JORP project led to a large-scale Air Force project that was originally planned to address the basic skills requirements of Air Force technical fields in the same manner as the JORP and FLIT projects, with attention to reading and arithmetic requirements of work. However, when it was recognized that most Air Force personnel do not lack rudimentary literacy and mathematics skills, the project was rapidly transformed into the search for methodologies for analyzing the knowledge and skills needed to be an expert technician in high technology fields (Gott, 1986).

From 1978 into 1989 the Army has pursued extensive work to analyze the basic skills of over 100 jobs, and to develop an extensive (over 400 hours) computer-based instructional system called the Job Skills Education Program (JSEP - "jay-sep") (Branson, in press). This project resulted from a briefing given in 1978 by Sticht to the then Assistant Secretary of the Army for Manpower, and a subsequent memorandum drafted by Sticht and redrafted and distributed by Dr. Sue Dueitt, Deputy Assistant Secretary of the Army for Human Systems and Resources.

From 1976 through 1985, the Navy developed and implemented the Job-Oriented Basic Skills (JOBS) program based on the FLIT approach. The JOBS program development concept was initiated by personnel at the Navy Personnel Research and Development Center in San Diego, and was facilitated by a 1977 meeting of Sticht with the Chief of Navy Personnel to provide a briefing on job-related literacy.

From 1983 through 1986, the Navy redesigned its on-duty reading and mathematics programs to change them from general to job-oriented programs. This work was accomplished by Sticht et al. (1986).

Technology Transfer from Military to Civilian Contexts

The "spin-off" from the FLIT project includes not only the military programs identified in Figure 2, but also projects to transfer the military's technological developments in both functional context literacy and technical training to civilian contexts. Four projects are discussed that demonstrate the roles of individuals, government offices, and private organizations in bringing about this transfer.

Functional Context/Electronics Technician's Training. In 1983 the Ford Foundation sponsored a research and development project to demonstrate how the functional context technical and literacy training methods developed in the Army could be applied in civilian contexts (Sticht, et al., 1987).

In this work, a new approach to electronics technicians training was developed that integrated basic skills (reading; mathematics; problem solving) completely into the technical training program. Prototype materials were developed that followed the principles of the functional context method that Shoemaker (1960) and others had originated in the Army. The materials and methods were tried out at a community college, and the results indicated that the approach was feasible.

Functional Context Education Workshops. Based on the work to develop the functional context electronics technicians course, the Ford Foundation sponsored the development of a workshop on Functional Context Education that was conducted by Sticht at major universities and government offices in the United States. Over 400 adult educators, policymakers, and curriculum development professionals attended the workshops. A portion of the workshop was included in a nationally broadcast program by WQED of Pittsburgh in a Public Broadcast System program called **A Job to be Done**.

Based on these workshops, several large-scale projects were subsequently started by various participants aimed at developing functional context, job-oriented literacy programs. Additionally, the Center for Advanced Learning Systems (CALS) in the U.S. Department of Labor prepared a paper for the International Labour Office that was distributed by that office. The paper was authored by David Barbee (1986) and was developed largely on the military work and Ford Foundation project to integrate electronics technicians training and basic skills training.

Technology Transfer in the Job Skills Education Program (JSEP). Branson (in press) has documented a joint project by the U.S. Departments of Labor, Defense, and Education to adapt the JSEP computer-based job-related basic skills instruction system to civilian contexts. Under a $628,000 contract from the U.S. Department of Education, the Center for Educational Technology at Florida State University, where the JSEP was originally developed for the Army, will adapt the JSEP for use in several states, including New York, Indiana, California and Delaware.

As Branson notes (in press, p. 34), even though there is the Stevenson-Wydler Technology Innovation Act of 1980 that advocates technology transfer from government to civilian users, technology transfer projects such as the JSEP are heavily dependent upon individuals to take the initiative in getting projects started. In the case of the JSEP technology transfer project, Sticht briefed Karl

Haigler, who was the Director of The Adult Literacy Initiative in the U.S. Department of Education, on the military's functional literacy activities, including the JSEP project. Based on this information, Haigler then initiated the actions that eventually culminated in the JSEP technology transfer project.

The McGraw-Hill Functional Context Basic Skills Project.

In early 1988, representatives of the Gregg Division of the McGraw-Hill Publishing Company contacted Sticht regarding the feasibility of developing vocationally-oriented basic skills (reading; mathematics) education materials for civilian schools.

Following a year of planning, with national market surveys, attendance at conferences, meetings with high level policymakers, and state and local education officials, it was determined that McGraw-Hill could provide a useful line of curriculum products to improve youth and adult basic skills by following the functional context approach developed in the military.

During the planning year, Apple Computer Corporation learned of the project and joined in a consortium with McGraw-Hill to provide computer support for the proposed project.

In late 1988 a major project was approved by McGraw-Hill management that would involve expenditures in excess of $3,000,000 to develop, publish, and distribute a new **Functional Context Basic Skills** series. In early 1989 a writing team was assembled and work was begun to develop book- and computer-based materials for integrating basic skills instruction with vocational instruction in the fields of Allied Health, Automated Office, Automotive Maintenance, Business, Construction Trades, and Electronics Technician.

Implications for Human Resources Development Policy and Practice

The results of the military's experience with lower ability, less literate personnel suggests several directions for human resources development policy and practice.

Finding Opportunities for Earning and Learning

The military experience suggests that many youth and adults who are rejected from gainful employment may, in fact, be able to learn and perform jobs better than expected. **Policies are needed that find opportunities for youth and young adults with lower academic skills in meaningful work within socially recognized and respected career fields that feature additional opportunities for training and education for career development.**

Policies that prescribe education and training prior to admittance into jobs cannot build on the positive factors of identification with an occupation and social cohesion among workers. Greater attention should be given to **policies that identify cognitive skills demands of jobs and cognitive abilities of youth and adults and develop methods for bringing people and jobs with matching cognitive levels together.**

This may involve developing better methods for identifying the cognitive demands of work, better methods for matching youth and adults to work for which they are qualified, and better designed programs of training and education for employed persons.

In general, the military experience suggests that, when given an opportunity to succeed in a meaningful work setting, perhaps in a form of National Service Corps, that matches their abilities, provides well designed training, and offers social support many, indeed, most youth and adults cast off from employment can succeed.

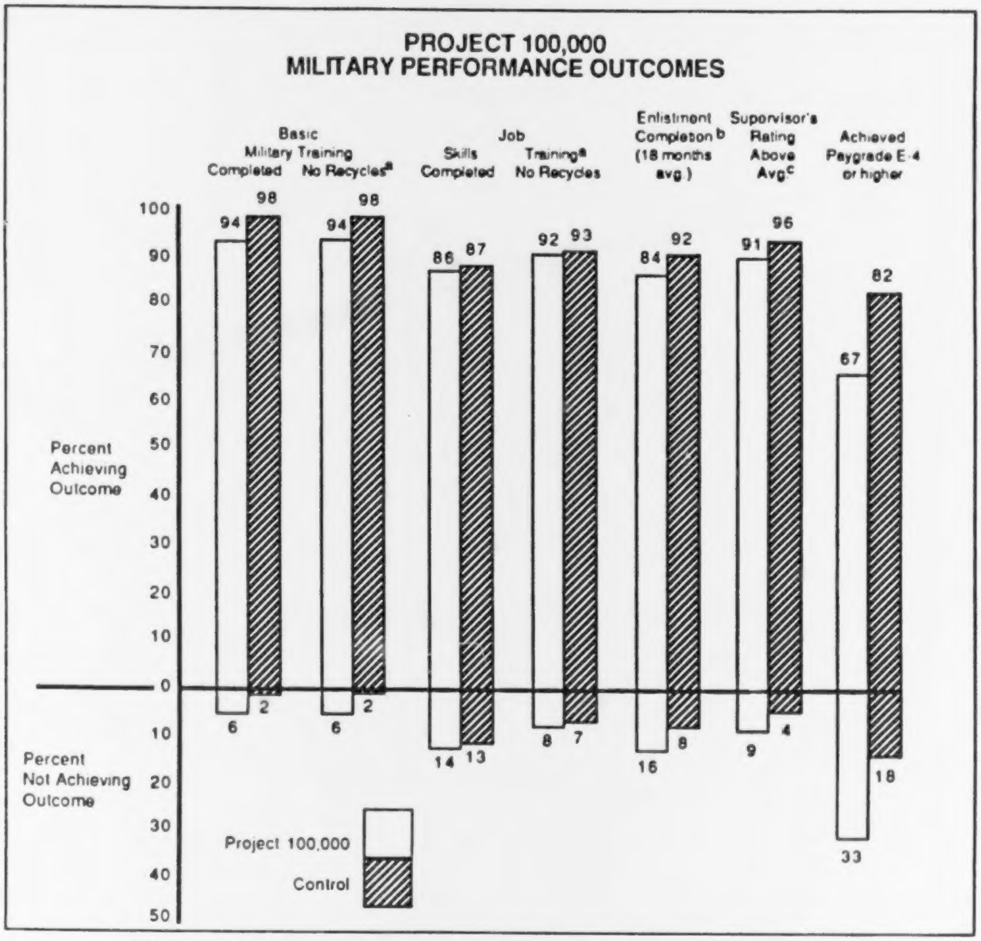
Functional Context Education

Research within the military demonstrates that many training and education programs are poorly designed, particularly with respect to lower ability youth and adults. In particular, programs that offer basic skills training in programs prior to and separate from vocational programs are not particularly effective in improving either basic skills nor vocational knowledge.

Policies are needed that direct practice in vocational and academic education away from the decontextualized programs that are typical of those in place, and that **develop new approaches to education and training in secondary schools and second chance programs that follow the principles of functional context training and education** developed by the military.

Technology Transfer

Ongoing projects reviewed in this paper show that **technology transfer** projects can be encouraged on the part of both private and public organizations that can help improve the functional nature of education and training for in-school and out-of-school youth and adults. Policies are needed that **encourage the better synthesis of research findings and promote the transfer of technology from the military** (and other government agencies) to the civilian world, with an emphasis upon finding investment opportunities within the private sector.



[a] Control data for Army only. Project 100,000 data for all DoD.

[b] Completion of 13-24 months of service with 18 months average service completed.

[c] Ratings averaged across all four services. Slightly underestimated rates for Army and Air Force 1-5% and overestimated Nay and Marine Corps 1-5%.

Source: Office of the Asst. Sec. Defense (Manpower), 1971; Ramsberger & Means, 1987.

Figure 1. Summary of training and job performance of Project 100,000 personnel.

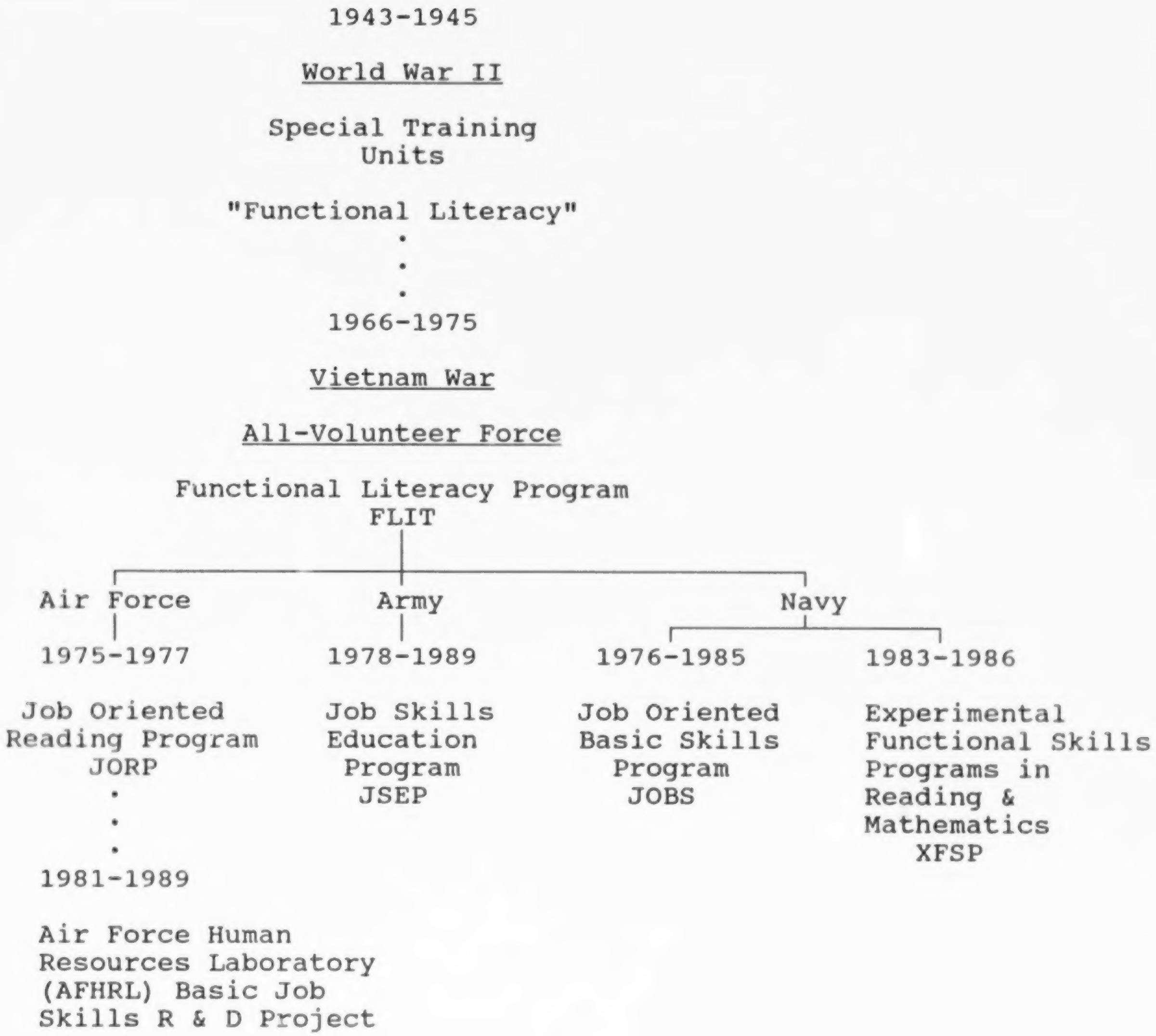

1943-1945
World War II
Special Training Units
"Functional Literacy"
1966-1975
Vietnam War
All-Volunteer Force
Functional Literacy Program FLIT
Air Force
Army
Navy
1975-1977
1978-1989
1976-1985
1983-1986
Job Oriented Reading Program JORP
Job Skills Education Program JSEP
Job Oriented Basic Skills Program JOBS
Experimental Functional Skills Programs in Reading & Mathematics XFSP
1981-1989
Air Force Human Resources Laboratory (AFHRL) Basic Job Skills R & D Project

Figure 2

Functional context literacy programs since World War II showing influence of the Functional Literacy (FLIT) project on past and ongoing military basic skills projects. The AFHRL project of 1981 through 1989 is a major shift from traditional literacy programs to complex analytical and problem solving skills needed to work with high tech equipment. However, it was originally stimulated by the FLIT/JORP work and is included to illustrate how projects interact and develop.

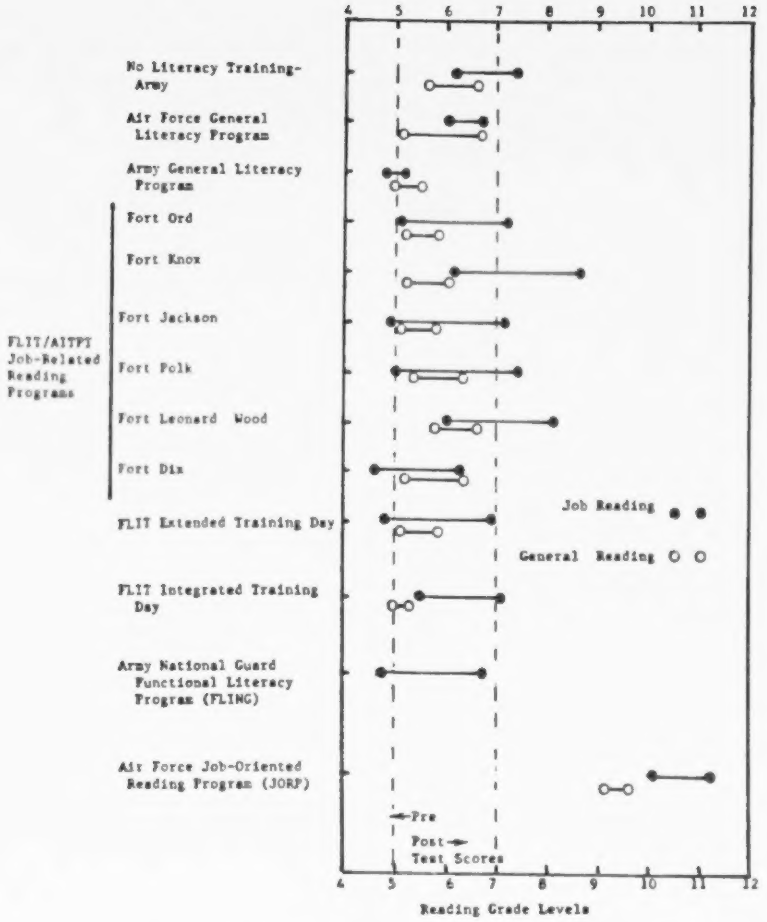


Figure 3

Data showing scores on pre- and post-job reading task tests and general literacy tests for different sites and FLIT training conditions.

Table 1

Army Performance of PI's and Non-PI's and High School Graduation Status

		Mental Category					
		I	II	IIIA	IIIB	IV	PI
First Term Attrition							
	HSG%[a]	25	24	26	29	27	29
	NHSG%	35	47	51	53	---	54
Achieved E 4+							
	HSG%	94	91	89	86	86	84
	NHSG%	81	79	76	73	---	72
Attrition in Skill Training							
	HSG%	5	5	6	6	7	6
	NHSG%	10	8	8	10	---	9
SQT Score							
	HSG%	80	73	68	63	59	59
	NHSG%	78	72	67	64	---	63
Percent Passing SQT							
	HSG%	90	81	71	61	50	51
	NHSG%	85	80	69	61	---	61
First-Term Retention							
	HSG%	24	25	26	30	34	33
	NHSG%	24	19	20	20	---	20

[a] HSG = High School Graduate; NHSG = Non High School Graduate
Source: Greenberg, (1980)

Table 2

Military Research Projects Illustrating the Application of Functional Context Training Projects

Project (authors)	Period	Service	Features	Outcomes		
				Reduce Training Attrition	Reduce Training Time	Improve Achievement
BE/E (Johnson)	1949	Navy	Teach basic electricity/ electronics	yes	yes	yes
LIMIT (Goffard,	1954-1960	Army	Teach BE/E for Field Radio course	---	---	yes
REPAIR (Brown, et al)	1955-1960	Army	First formal statement of functional context method	---	---	yes
X-ET (Pickering & Anderson)	1964-1966	Navy	Teach BE/E to low aptitude sailors	---	yes	yes
SUPPORT (Ward, et al)	1967-1970	Army	Redesign medical corpsman course	---	fixed	yes
SUPPORT (Goffard, et al)	1967-1970	Army	Redesign radio operator's course	yes	yes	yes
APSTRAT (Weingarten, et al)	1968-1972	Army	Introduced peer instruction; mastery learning	yes	yes	yes

REFERENCES

Barbee, David E. "Methods of Providing Vocational Skills to Individuals with Low Literacy Levels: The U.S. Experience. Discussion Paper No. 1." Geneva: International Labour Office, Vocational Training Branch, October 1986.

Branson, Robert K. "Design, Development, Implementation, and Technology Transfer in the Job Skills Education Program." Tallahassee, FL: Florida State University, (in press).

Brown, John S., Allan Collins, and Paul Guguid. "Situated Cognition and the Culture of Learning." Educational Researcher 18 (January-February 1989): 32-42.

Coleman, James and T. Hoffer. Public and Private High Schools. New York: Basic Books, 1987.

Cory, C. and S. Booth-Kewley. "Relationship of Mental and Educational Levels of CY76 Navy Male Enlisted Personnel to Job Outcome Criteria." San Diego, CA: Navy Personnel Research and Development Center, 1986.

Eitelberg, Mark J. Manpower for Military Occupations. Alexandria, VA: Human Resources Research Organization, April 1988.

Fisher, A. J. "Army "New Standards" Personnel: Effect of Remedial Literacy Training on Performance in Military Service." Alexandria, VA: Human Resources Research Organization, 1971.

Goffard, S J., D F. Polden and J.S. Ward. "Development and Evaluation of an Improved Radio Operator Course (MOS 05B20). HumRRO-TR-70-8." Alexandria, VA: Human Resources Research Organization, 1970.

Goldberg, Samuel. Army Training of Illiterates in World War II. New York: Columbia University, Teachers College Press, 1951.

Greenberg, I. M. "Project 100,000: The Training of Former Rejectees." Phi Delta Kappan 50 (June 1969):570-574.

Greenberg, I. M. "Mental Standards for Enlistment: Performance of Army Personnel Related to AFQT/ASVAB Scores." Monterey, CA: McFann, Gray & Associates, 1980.

Gott, Sherrie P. "Basic Skills that Enable Competence in Complex Domains." In T. Sticht, F. Chang, and S. Wood (eds.), Cognitive Sciences and Human Resources Management: Advances in Reading/Language Research Volume 4. Greenwich, CT: JAI Press, 1986

Gott, Sherrie P. "Apprenticeship Instruction for Real-World Tasks: The Coordination of Procedures, Mental Models, and Strategies." In E.Z. Rothkopf (ed.), Review of Research in Education: Volume 15. Washington, DC: American Educational Research Association, 1988.

Johnson, H.O. "The Development of More Effective Methods of Training Electronics Technicians." Washington, DC: Working Group on Human Behavior Under Conditions of Military Service, Research and Development Board, Department of Defense, 1951.

Levitan, S. and F. Gallo. A Second Chance: Training for Jobs. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research, 1988.

Means, B.M., A. Nigam, and J.G. Heisey. "When Low-Aptitude Recruits Succeed." Paper presented at the meeting of the Military Testing Association, San Diego, California, October 1985.

Ramsberger, P.F. and B. Means. "Military Performance of Low-Aptitude Recruits: A Reexamination of Data from Project 100,000 and the ASVAB Misnorming Period. HumRRO FR-PRD-87-31." Alexandria, VA: Human Resources Research Organization, September 1987.

Sellman, Wayne S. "Response to Panel Discussion on Issues in the Implementation of a Job Performance Measurement Program." In H. Baker and G. Laabs (eds.), _Proceedings of the Department of Defense/Educational Testing Service Conference on Job Performance Measurement Technologies_. San Diego, CA: Navy Personnel Research and Development Center, March 1987.

Shoemaker, Harry. A. "The Functional Context Method of Instruction." _IRE Transactions on Education_, E-3 (June 1960): 52-57.

Sticht, Thomas G. _Functional Context Education: Workshop Resource Notebook_. San Diego, CA: Applied Behavioral & Cognitive Sciences, Inc., March 1987.

Sticht, Thomas G. "Adult Literacy Education." In E. Rothkopf (Ed.) _Review of Research in Education, Vol. 15._ Washington, DC: American Educational Research Association.

Sticht, Thomas G. "Military Testing and Public Policy: Selected Studies of Lower Aptitude Personnel." Berkeley, CA: University of California, Berkeley, National Commission on Testing and Public Policy, January 1989.

Sticht, Thomas G., William B. Armstrong, Daniel T. Hickey, and John S. Caylor. Cast-off Youth: Policy and Training Methods from the Military Experience. New York: Praeger, 1987.

Sticht, Thomas G., L. Armijo, N. Koffman, K. Roberson, R. Weitzman, F. Chang, and J. Moracco. "Teachers, Books, Computers and Peers: Integrated Communications Technologies for Adult Literacy Development." Monterey, CA: U.S. Naval Postgraduate School, 1986.

U.S. Department of Labor, The Commission on Workforce Quality and Labor Market Efficiency. Workforce Quality. Washington, DC: U.S. Department of Labor, January 1989.

42. THE ROLE OF UNIONS IN IMPROVING WORKFORCE QUALITY, LABOR MARKET EFFICIENCY, AND EFFECTIVE EMPLOYEE MANAGMENT

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Union Goals:

Unions ultimately exist to serve the interests of their membership. Yet in the process of serving those interests, unions also influence the quality of the labor force, the efficiency of labor markets, and the effectiveness of employee management. The public has an interest in these effects, and perhaps the best way to summarize that interest is simply to ask: Do unions make the economy more or less effective? There are certainly other areas where the public interest in unions may be keen, such as general concerns about justice and employee rights, and there is no effort here to put forth efficiency issues as necessarily being the most important effects of unions. Yet in contrast to some of these other goals where interest in society may conflict (between unions and management of employee rights, e.g.), there appears to be a clear consensus that we need to find ways to make the economy more competitive and that everyone would benefit from such developments. Even serving their private interests, unions and their members need an economy that is efficient in order to provide jobs with good wages and working conditions.

Of course, it would be wrong to imply that all efforts to increase the competitiveness of an economy are necessarily desirable. Some may at least suggest tradeoffs against other important interests. For example, costs and prices could be reduced if everyone in the U.S. gave up their vacations, took pay cuts, and worked longer hours for no additional pay yet few people advocate such a change.

Assessing the effects of unions is a counterfactual exercise and requires making a comparison about the situation in their absence. The difficulty with this comparison in practice is that researchers often make the comparison not with what actually occurs where unions are not present but with a stylized model of how things should be. One could imagine that there are an infinite number of such models and that a wide range of conclusions could be generated simply by the choice of model. Because most of the research on the effects of unions is done by economists, the model often chosen is the free market, or more accurately, a perfect market model.

Certainly it does not seem appropriate to judge the functions of a real institution by comparing it to an abstract model. And it becomes even less appropriate as the model becomes more abstract. There are those, for example, who argue that the labor market is best understood as a set of efficient markets with perfect information where all optimal employment policies are instantaneously known and applied. Freeman and Medoff (1981) describe a branch of the literature which asserts *a priori* that unions must not have any effects on unit labor costs because if they did, perfect product markets would have driven their employers out of business. Comparisons with such models do not seem to be useful, and comparisons here will be based on comparisons with the existing nonunion sector.

The Economy:

The modern period of unionism in the U.S. can be traced to the New Deal and the rise of industrial unions. In the beginning of that period, unions had an explicit role in macroeconomic policy. By enforcing contracts on wages and other issues affecting labor costs, they helped prevent cost and price cutting which were seen as one of the key factors driving the Great Depression (Piore 1981). They were also seen as providing a counterbalance to the interests of the large industrial enterprises which often acted like oligopolies and ignored the interests of other groups (Galbraith 1978). Finally, through their demands and the exercise of bargaining power, unions improved working conditions and standards of living not only for their members but also for workers in unorganized sectors. In order to try to keep unions out of their firms, nonunion employers adopted many of the gains secured by unions within their industries. These "spillover" effects are especially clear between the organized and unorganized plants within the same firm, but they are also documented for the economy as a whole (Kahn 1980).[1]

Over time, the importance of these roles had begun to erode. The interest in supporting costs and prices disappeared after World War II when the economy recovered from the Depression. By the 1970's, inflation had become the national concern, and union wage demands were associated with at least some of the cost-push inflation. Union wage setting had now become a problem rather than a benefit.

The New Deal advocates of unions had seen them as the most important mechanism for handling the interests of workers. Unions would represent the interests of workers and pursue improvements through collective bargaining, establishing an American model of industrial democracy where there would be little need for government intervention in employment matters, or so the argument went. But the exclusivity of that role also began to erode in part because such a large proportion of the workforce remained unorganized, declining from a peak of about 35 percent to present estimates as low as 16 percent of the workforce. As a result, demands for changes in conditions at work were increasingly pressed through legislation and government action in order to address the concerns of the majority of workers who were unorganized. It is important to note that unions played crucial roles supporting the passage of much of the protective legislation concerning employment issues (equal employment laws, safety and health, etc.). And part of the more recent union emphasis on legislation has come about because unions have been less successful at protecting the interests of their members through collective bargaining. But at least some of that legislation was also directed in part against the failure of unions in their role as worker representatives (e.g., the pension reform legislation was motivated in part by abuses of union pension funds). Legislation and government action increasingly became an alternative method for addressing worker concerns and in some respects a substitute for the union model.

The rise of foreign competition and the recession of the 1980's also helped reduce two other traditional roles for labor. As low-wage foreign competitors took increasing shares of our markets, pundits began to point to the high cost of U.S. producers as the cause (rather than the depressed wages abroad), and the wage increases associated with unions, especially in manufacturing, took a disproportionate share of the blame. The high standard of living of union workers now appeared to be a problem rather than a benefit. Similarly, as U.S. industries declined in the face of foreign competition, especially from Japan and what appeared to be its government-supported export policies, it became more difficult to picture American firms as monoliths which required counterbalancing by strong unions and easier to see them as organizations in need of help. We should point out, of course, that individual employees still need as much protection as ever from these employers as they move to address increasing competition by cutting labor costs and stepping up labor productivity.

Events in the 1980's may revive one of the more important roles for trade unions in the economy, however, and that is to protect standards of living for workers. As inflation declined through the mid-1980's, attention began to focus on real wages and standards of living. Real wages had declined since the early 1970's and continued to decline even through the economic expansion of the 1980's. They rose less fast than productivity growth and also lagged behind increases in profits. At the same time, attention began to focus on changes in the distribution of income and what some saw as the decline of the middle class, a group often associated with union jobs (at least the better paid union jobs).[2] The fact that union wages actually grew more slowly during this period than did those in the nonunion sector (see Current Wage Developments, 1981-1987) suggests that unions were no longer able to provide a spur to standards of living and, indeed, their relative decline may have helped restrain wages in the nonunion sector. If real wages and the standard of living are to regain their old levels and grow in the future, it may require stronger unions operating in their traditional collective bargaining role.

There are two other macro-economic concerns about the effects unions may have on efficiency. The first is the potential misallocation of labor resources in the economy caused by the distortions that union wage settlements impose on labor costs. Briefly, because union jobs receive premiums above market rates, less labor is supposedly employed in those jobs, those functions are performed by less efficient substitutes (capital or other forms of labor), and the economy is distorted. Recent estimates of the costs of this distortion put it as low as 0.02 percent of Gross National Product (DeFina 1983), a negligible figure. The second concern is with strikes. Although it takes two parties to have a strike, the fact that there are no measurable strikes in the nonunion sector (although there may be job actions such as slowdowns, sabotage, etc. that do not get reported) means that strike costs are attributed to unions as well. Research by Neumann and Reder (1984) suggests that the costs to the economy of strikes is negligible and has declined since their study because the strike rate has declined and because management's ability to maintain production during strikes with replacement workers, e.g., has increased substantially.

Within the Firm:

Most of the research concerning the effects of unions has focused within the firm, e.g., how wages and other conditions of employment differ in facilities where workers are represented by unions as compared to those that are nonunion. The great methodological difficulty with this approach is, of course, that unions do not set wages and working conditions unilaterally. They are set through collective bargaining with the employer and therefore also reflect characteristics of the employer and their interests; the fact that bargaining takes place against the status quo of the terms and conditions that management had in place before the workforce was organized is but one obvious manifestation of this relationship. Given this problem, it is impossible to ascribe differences in conditions to unions unless the characteristics of employers can be held constant.

The assumption in much of this literature is that all other differences across employment settings can be controlled for so that only the difference due to union status remains. It is very difficult to imagine how this can be the case given that the data are typically at the industry level of aggregation (almost never below the firm-level), so that all the basic differences associated with how a firm is managed remain. For example, there is every reason to believe that unions target firms for organizing based on the probability of success; the firms unions select for organizing should be systematically different from other firms, and the ones where they are successful should also be different. The very fact that a union gets into an organization may suggest that the organization is fundamentally different from nonunion firms. One such difference is that such firms probably had poorer employee relations and more workforce dissatisfaction than other firms.

The second criticism of this assumption is that once unionized, firms are no longer managed in the same manner even in those areas that are outside of collective bargaining and direct union influence. Kochan and Verma (1984) show how one company systematically shifted investment away from its unionized facilities towards its nonunion plants. Connolly, Hirsch, and Hirschey (1986) find evidence that unionized firms have lower investment in research and development; Acs and Audretsch (1987) find that unionized firms in manufacturing make fewer innovations which ultimately lead to new products; Bronars and Deere (cited in Addison and Hirsch 1989) find that unionization is associated with a whole range of reduced investment including lower advertising expenditures.

The fact that firms systematically reduce investment -- both capital and, apparently, entrepreneurial skill -- in unionized facilities no doubt contributes to the overall finding that profit levels and returns on equity are lower where unions are present. Addison and Hirsch (1989) survey some 16 studies and conclude that profit levels are lower in unionized firms. The question, however, is whether that should be attributed to unions. Certainly some of the proximate decisions affecting profitability, such as investment and managerial effort, are beyond the union's control. Indeed, it could be that lower levels of investment were what caused the firms to be organized in the first place, possibly because of the adverse effects on employee relations (such as job security).

One could argue that management was forced to reduce investment once a plant was unionized because it somehow knew that unionization would make the plant less efficient. Whether the firm knew this in an objective sense -- as in experience with other unionized facilities -- or simply assumed it is much more than a semantic issue here. It is very difficult to ever test this once firms begin to reduce investment because the cycle then is self-fulfilling; once a facility is organized, management reduces investment, and the facility soon experiences lower profitability or efficiency. More importantly, all of this research begs the fundamental question about the effect unions actually have on the way organizations are managed. What is the mechanism through which unions influence the way firms are run: Is that mechanism independent of the effects associated with management's reaction to unions?

Given these difficulties, it is nevertheless useful to see what previous studies of the effects of unions on firms have found. The first econometric by Brown and Medoff (1978) used data across industries and found that unionization was associated with higher hourly labor costs but also higher productivity; the latter offset the former so that unionization was associated with approximately a 20 percent reduction in unit costs. Clark (1980) controls for much of the exogenous differences noted above by focusing his analysis on a single industry (cement) and by measuring productivity in physical units. He finds that productivity in unionized facilities was as much as 10 percent higher. Clark (1980a) takes this study a step further with an analysis of cement companies that went from nonunion to organized. This before-and-after study is by far the best methodology for controlling the exogenous differences that might be associated with union status because these are the same firms, and it appears to be the only such study. Here, productivity rose by as much as 8 percent after the firms were unionized. Allen (1984) looks within the construction industry and finds that unionized firms are also more productive.

There are, however, other studies which find that unionization is associated with lower productivity; Bemmels (1987) in manufacturing, Lovell, Sickles and Warren (1988) for economy-wide data, for example (see Hirsch and Addison 1986 for a survey). One striking difference between the studies that draw these two different conclusions lies with the periods that they examined. Studies showing gains associated with unions tend to be based on data before the mid-1970's while studies showing lower productivity include data since then when management's resistance to unions increased. Allen (1988), for example, now finds that union construction companies are no longer more productive than are nonunion firms, and he notes that one reason for this may be because of the growing strength and sophistication of nonunion firms relative to their union counterparts in their ability to secure skilled workers.[3]

Reasons for Differences in Productivity:

As noted above, the problem with most of the studies of unions and profitability or productivity is that they lack explanatory relevance -- mechanisms through which unions could produce these effects are generally not examined. The impediments to reduced labor costs and overall performance in the union sector are reasonably obvious. Unions raise wage and benefit levels. They also impose restrictions on management's use of labor -- so-called "restrictive work rules." Not everyone agrees on what counts as "restrictive," however. Any limit on hours worked or restrictions on conditions which, for example, affect safety is an impediment to lower costs. Certainly there are some work rules that do seem an unnecessary burden on efficiency -- make-work rules which require excessive manning levels. Such rules are quite rare now, however, and as McKersie and Hunter (1971) noted, even these rules can be eliminated through collective bargaining where the productivity gains are shared with the workers.

Mechanisms through which firm-level efficiency can be improved through the presence of a union have not been as clearly described. There have been examples where unions have been explicitly involved in efforts to improve firm productivity and where the mechanism is clear. In the garment industry, for example, the unions provided industrial engineers to rationalize production methods. The firms were too small and had insufficient resources to employ them on their own, although presumably some kind of employer association could in principle have done the same thing. Similarly, there are long histories of union/management productivity committees designed to solve problems by seeking solutions from the expertise of workers and ensuring their commitment to proposed changes (see the Cooke paper in this series). These committees could also operate in the absence of unions, although there are reasons to believe that they might not operate as well (see below).

Aside from this explicit involvement, arguments about how unions affect productivity -- for good or for bad -- have been lacking. One of the earliest such arguments can be traced to Slichter (1942) who described the process through which union organizing and subsequent collective bargaining demands brought problem areas to the attention of management and forced them to be addressed. This is the so-called "shock effect." Kuhn (1985) presents a modern version of the argument by suggesting that unions provide a way of monitoring managers and a potential check on their poor performance (presumably supervisory managers). A related argument by Feller (1973) is that management itself has benefits from union rules by limiting the arbitrary and often damaging decisionmaking power of managers. Clark's (1980a) before-and-after unionization study finds some evidence for arguments of this kind, such as the fact that "bad" plant managers were replaced after union wins. There are, of course, alternative methods for discovering these problem areas, and the growth of nonunion, human resource systems which emphasize attitudinal surveys, for example, suggests that the potential for such shock effects from unions is reduced in better-managed firms.

Recent efforts have suggested that the higher labor costs associated with unions are a different kind of shock to which management must respond by finding greater productivity. Hirsch and Addison (1986, Chapter 7) argue, for example, that productivity gains tend to be higher in industries where the union wage premium is also higher.[4] In other words, management finds a way to get productivity growth where unions create a greater need for it. But, of course, this does not help explain how they manage to get it.

There are other arguments which suggest that higher wages (relative to the labor market) may produce desirable effects. They should attract more qualified workers, reduce the incentives to quit, and improve employee performance on the job -- reducing supervision and monitoring costs, for example -- because workers want to avoid being fired in order to keep these high wage jobs. These are "efficiency wage" arguments, and there is now a literature suggesting some empirical support for them. For example, wage premiums are associated with better quality workers (Weiss 1980), with reduced discipline (Cappelli and Chauvin forthcoming), and with lower turnover (Pencavel 1971). These effects may partially offset some of the costs associated with union wage premiums, but there is no evidence yet that efficiency benefits exceed the costs of higher union wages which are by definition above market-clearing levels in the efficiency models.

The more compelling mechanism, and the one that has received the most research attention, is Freeman and Medoff's (1984) argument about "voice." Basically, unions provide a mechanism for addressing workplace problems that would otherwise lead workers to exit or quit.[5] Psychologists take this argument further and suggest that while workers may not quit, they may deal with perceived workplace problems by withdrawing through absenteeism or by putting less into the job (see, e.g., Adams 1963). Collective bargaining provides a mechanism for voicing collective problems while grievance procedures provide the mechanism for addressing the problems of individual workers.

There is evidence that quit rates and turnover are lower in unionized settings after controlling for the higher union wage rates (see Freeman 1980 and Blau and Kahn 1983). Ichniowski and Lewin (1987) summarize the literature on grievance procedures and conclude that these procedures reduce turnover.[6] The literature has not examined potential effects above the level of the individual in part because of the difficulty in securing such organizational data. (See Freeman and Medoff 1984 for reviews of the "voice" literature.) The behavioral literature does suggest that there can be clear gains associated with employee participation -- gains from soliciting the ideas of workers, increasing their commitment, etc. These gains tend to be much greater for direct participation as opposed to the representative variety provided by collective bargaining (see Strauss and Levine paper in this series), but unions also have an important role to play in direct participation programs such as quality of worklife programs. Specifically, they ensure that worker input is taken seriously and that the participation programs are not simply abandoned if they generate suggestions that are temporarily inconvenient for management (see Kochan et al., paper in this series).

The process of collective bargaining may also provide some economic benefits to both unions and managements by making possible combinations of wage and employment levels that are preferred by both parties to the market combinations. The "efficient contracts" literature suggests that both sides would prefer a settlement with higher levels of employment at a given wage than would be possible in the absence of bargaining where the relationship would be determined by the employer's derived demand for labor. Union bargaining power can force a settlement off the employer's demand curve. Brown and Ashenfelter (1986) and Abowd (1987) find some limited empirical support for this notion.

Perhaps a more important potential effect relates to the role that unions play in creating internal labor markets within a firm. Elbaum's (1984) study of the steel industry illustrates how unionization transformed it from one where employment was subcontracted to one based on an internal labor market with seniority hiring and long-term employment relations. One can think of internal labor markets as a system for holding workers within the firm through internal promotion, job security systems such as seniority layoffs, etc. Because they reduce turnover, which is costly in itself, internal labor markets also make it feasible for firms to provide training without losing the benefits through turnover (see below).

There is evidence that unionized industries tend to have higher levels of layoffs (Medoff 1979) in part because unions prevent wages from falling to adjust to declining demand so that all of the adjustment falls to employment. But unions have compensated for this through supplemental unemployment benefits which protect income and seniority-based recall rights so that the attachment to the firm continues even during temporary layoffs. On balance, it appears that unions do increase the attachment of workers to firms.

Another employment rule associated with unions and internal labor markets is to base pay in part on seniority. There are arguments which suggest that seniority-based pay is an efficient method of retaining workers by delaying the best pay until the end of one's career (Lazear 1979). In many cases, it may be difficult for firms to institute internal labor markets in the absence of unions. In production jobs, for example, where there are at least initially relatively few firm-specific skills that bind workers to firms, the fact that other firms rely on the outside market means that if one's firm provides additional general training, it will be lost because other firms will hire such workers away. But if all firms in the external labor market have union-imposed internal labor market systems, then outside firms are not hiring from the external market, and the chances of losing employees is further reduced. The incentive to invest in training is therefore greater.

Most of these points about the potentially beneficial effects of unions on firms beg a very important question: If the arrangements associated with unions are beneficial to the performance of the firm, why don't firms undertake them voluntarily -- indeed, why do they resist unions and their demands so vociferously?

There are examples where nonunion firms have pursued at least some of the institutions associated with unions. Medoff and Abraham (1981), for example, find that seniority-based pay rules appear to operate even in nonunion firms that profess to base pay on performance. A better example might be grievance procedures which appear to be the program most desired by nonunion employees (Kochan 1979). Grievance procedures are relatively inexpensive, and there is evidence that they appear to provide substantial benefits to the organization in terms of their ability to address workplace problems. Surveys of nonunion firms find that roughly half have some written grievance procedure (typically without arbitration) for at least some of their employees -- whether that is a lot or a little depends on one's perspective (Lewin 1987). When asked why they have these programs, however, most respond that their motivation is to keep unions out (Freedman 1985). One reason for management's apparent lack of enthusiasm for grievance procedures despite their apparent benefits is because they make the manager's job more difficult: they create a check on management's decisions and provide a form of appeal which forces managers to be much more careful in their decisionmaking.

Further, it is not enough simply to have a grievance procedure on the books. It is also important to see how well it operates. In the absence of a union to protect employees, there is nothing except management's good intentions to prevent retribution by managers against those employees who file grievances. The Lewin study finds some evidence which appears to suggest that management may have engaged in systematic retribution against employees who use grievance procedures.[7]

Management may object to unions and to at least some of the institutions associated with them for reasons other than possible effects on efficiency. We know from research on employee participation plans, for example, that programs which transfer some power and authority from management to workers are often severely resisted by management even though such programs appear on balance to have positive impacts on productivity (see Strauss and Levine in this series). The explanation quite clearly appears to be that these programs make management's job more difficult: it is harder to manage in a system where power is shared than where one holds power unilaterally. While such programs may be in the interest of the firm as a whole, they may not be in the interest of individual managers and are therefore resisted by them. Certainly this appears to be one reason why grievance procedures have not spread to the nonunion sector despite their apparent benefits.

What Management Wants:

One can get some idea of the aspects of union employment that management finds particularly burdensome by examining the concessions they demand from unions. In terms of collective bargaining structure, management has long objected to the practice of pattern bargaining which creates uniform contracts across firms regardless of ability to pay or other firm-specific considerations. Management rightly argues that greater flexibility might make possible agreements better suited to the interests of both sides. The most dramatic examples of this problem occur when struggling firms ask for labor cost concessions in order to cut costs, stay in business, and ultimately save jobs. In many cases, unions have not agreed to such concessions: jobs are lost, and the union is divided between the local, which argues hard for concessions, and the international, which opposes them. Unions hold out for fear that competitor firms will also demand them and erode all contracts in the industry. Certainly there is evidence that this has happened in industries such as airlines (see Cappelli 1987) and that firms may deliberately pursue a strategy of threatening selective plant closures in order to force concessions across all their plants (see Cappelli 1985). They also argue, with justification, that management cannot always be trusted to tell the truth about how serious its financial troubles are -- hence the demands for management to "open its books."

Management would prefer arrangements similar to those in Japan where unions are not linked across competitors but operate independently with each firm. The interests of such "enterprise" unions are obviously aligned very closely to those of the firm, reducing conflicts. Fortunately for management, the breakdown of pattern bargaining across firms has already produced collective bargaining along an enterprise pattern. With the exception of railroads, there is now no real industry-wide bargaining in the U.S. Union supporters rightly note that enterprise-type bargaining also has the disadvantage from their perspective of seriously reducing their bargaining power because it eliminates the monopoly wage -- a situation where all competitors have the same labor costs which reduces the pressure to cut those costs.

Perhaps management's most important objections are to the characteristics of union contracts. The long-term nature of these contracts certainly reduces the flexibility of firms and their ability to change and adapt to new developments. On the shop floor, contracts that narrowly define job duties -- so-called restrictive workrules associated with job control unionism -- are perhaps management's greatest concern.

Union supporters would counter that unions should not necessarily get all the blame for these contracts because they are the product of collective bargaining between unions and management. More importantly, there is nothing about unions per se that requires restrictive workrules. In fact, the narrow job rules typically originated through management efforts at introducing scientific management or "Taylorism." Unions enforce these rules simply as a device to protect job security in the absence of other arrangements. Where management has been able to provide job security, they have also gotten freedom from such restrictions in union contracts (Cappelli and McKersie 1987). Unions do, however, resist aspects of flexibility that are associated with making jobs harder -- longer hours, faster work pace, etc. -- but some firms have even been able to secure these changes from unions in return for job security and an environment that creates commitment to the organization (see, e.g., accounts of NUMMI/UAW auto assembly relationship in Freemont, CA by Brown and Reich 1988). It is fair to say, however, that unions can slow down the pace with which changes are introduced in the workplace.

Management supporters often argue that it is possible to develop an alternative, nonunion system of employee relations which protects worker interests while increasing flexibility and the commitment of employees. Business Week (1981) described such systems as "the New Industrial Relations." They often include explicit job security, wage levels above community levels (albeit generally rural communities and below industry levels), greater responsibility for employees, broader jobs and more scope for initiative, etc. Such arrangements provide much of the protections of unions without the restrictions associated with unions.

It would seem that such arrangements should operate to the great advantage of the organization, although there is as yet little but anecdotal evidence to support that conclusion. Certainly some aspects of these systems have been shown to be suspect in other situations. For example, management routinely pushes for merit pay -- individualized pay increases based on individual performance -- on the grounds that it should provide greater motivation and improve performance. Yet such programs routinely break down (see Foulkes 1980) because of conflicts between the interests of the individual and those of the organization.

The more interesting question is, if "the New Industrial Relations" is such an effective system, why has it not dominated arrangements in the nonunion sector? It is very difficult to know with any certainty what the average employee relations conditions are in the nonunion sector, but there clearly is a wide range of practices even in the same industries -- contrast the paternalism of Delta Airlines on the one hand with the aggressive, cost-cutting style of Continental Airlines, for example. Relatively few nonunion firms offer employees even some of the protections against arbitrary decisions associated with unions. Further, one reason employers pursue these progressive practices in their nonunion facilities is to keep unions out of those facilities (Fiorito et al. 1987). In the absence of the union threat, it is not clear whether firms would pursue "the New Industrial Relations."

Training:

The most important public policy function that unions have and one that is becoming increasingly important is to increase the level of training provided to its members. Training increases the effectiveness of employees and organizations. Employees appear to need additional training when organizations change, and many U.S. firms now go through reasonably continuous processes of transition. Further, there is evidence that new technologies and new methods of organizing work require higher levels of skill from workers in order to be effective. In particular, firms that wish to become more flexible in their production methods need workers with more flexibility and skill (Piore and Sabel 1986). And there is also evidence of a skill shortage in the U.S.: many employers are having a hard time finding workers with the basic skills (general skills such as math and reading skills needed for entry-level jobs) needed to fill their jobs (see other papers). The lack of training and the shortage of skilled workers effects the strategies that firms can use to compete in their product markets. It is harder to produce in the flexible method described above and may force firms back to traditional mass production methods.

Part of the reason for the skill shortage lies in the nature of the market for skill. As Becker (1964) made clear, basic or general skills are equally useful to a variety of employers. Any individual employer will therefore be reluctant to pay to provide workers with these skills because other employers can come along and hire these employees away, getting all of the benefit of those skills without paying for them. The first employer then loses his entire investment in training.

Unions have played the central role as providers of training in many occupations where the skills are so completely general that no employer will provide the training. The most obvious examples are skilled trades such as electricians and carpenters. Unions provide these skills through apprenticeship programs, typically operated jointly with management, and in many cases certify the skills. It makes sense for the unions to be involved in providing these skills because the union will have a long-term relationship with the worker (through membership) during which time the costs of the training can be recovered through dues.[8] In order to operate in this fashion, however, unions must be able to prevent the skilled worker once trained from leaving the union (i.e., working for an unorganized employer).

The skilled trades examples above point out another contribution that unions can make to economic efficiency. Employment in occupations like skilled trades is often reasonably casual in part because the skills are so general. Unions organize these labor markets through hiring halls. Firms might be able to provide this coordinating function (e.g., the temporary help industry), but unlike such firms, unions are in a position to make investments in workers by providing training, etc. Again, the reason is because unions have a long-term relationship with the workers and a way to capture at least some of the gains from these human capital investments. There are unions outside of skilled trades which also perform some of these functions (e.g., for teachers). Indeed, some people suggest that casual employment relationships are on the rise (e.g., Pfeffer and Baron 1988), and the attempts by some occupations to create professional groups (human resource professionals) that would certify skills and provide training -- much as the American Medical Association or the Society of Automotive Engineers -- represents exactly the same phenomenon.

Unions also influence the provision of training within firms. As noted above, unions encourage the development of internal labor markets which provide a way for firms to keep workers and capture some of the benefits from more general skills.[9] Even beyond that, unions force firms through collective bargaining to increase the basic skills of the workforce. The importance of this role has become especially clear recently as firms have gone through large-scale restructuring and changes in technology that have demanded new skills (generally higher levels of basic skills) from their workers. The cheapest option for the firm would be to rely on the outside labor market -- layoff the existing workforce whose skills are inadequate and hire new workers with higher skill levels from the outside.

From a societal viewpoint, however, this process is not desirable first because it takes the low-skill workers and makes them unemployed; it is very difficult for such workers to find new jobs or to receive the basic skills necessary to find new jobs. Second, it merely bids up the price of skilled labor, making it very expensive if all firms follow similar approaches. The overall result would be to exacerbate considerably the division between the skilled workers, who would be very highly paid, and the less-skilled, who in the worst case would be unemployable. Further, the level of basic skills among the workforce would not improve.

What unions have done through collective bargaining is help press employers to retrain their existing workforces, creating the higher level of basic, general skills necessary for these new jobs. In the process, society is saved the costs of dealing with a group of largely unemployable job losers, and the costs to the firm of providing the training are at least reduced by avoiding a bidding war for skilled workers.[10] There are a series of examples now where unions have pressed firms to provide such retraining (see Ferman et al. forthcoming).

Unions play a similar role in securing retraining for workers who are going to be displaced. Once a firm has made the decision to close a plant and layoff workers, it has little financial incentive to do anything for those workers. Its relationship with them has ended, and there is no way to recoup any benefits from an investment in human capital. Unions at companies like Ford and GM have worked with management to provide extensive retraining and adjustment services to help displaced workers make the transition to new jobs. The GM/UAW program, for example, spends $100 million per year on training for jobs outside GM, a sum larger than the annual budget of many universities.

Training for the displaced could also be provided by the public sector or by community groups funded by the government, even if it is provided at the employer's location. The union nevertheless has a unique role because its relationship with the worker extends through the transition. In many cases, the workers retain membership after being displaced, and the union maintains a relationship with them through retraining and even after. So the continuity of the relationship is important.

It is certainly possible to argue that the kind of training costs outlined above are really society's problem and should not be pushed onto employers. The difficulty with that argument, however, is that no one else is willing at present to provide this kind of training, and in the absence of unions, there is every reason to believe less will be provided. Employers in the countries that compete most successfully with the U.S. -- especially Japan and Germany -- play a larger role in training than do our own which suggests that greater employer-supported training is not necessaril[illegible]en to competitiveness.

Conclusions:

We still know relatively little about how unions affect employers in large part because of a lack of data and research at the level of the firm. What evidence we do have suggests that the effects are complex and go well beyond the effects associated with higher wages upon which so much research has focused. In particular, we need a better understanding of the role that unions play in providing training and greater attachment to the employer. The arguments above lead to the following policy recommendations:

>We need more research at the firm level that will investigate the mechanisms through which union coverage affects the management of workers and the behavior of the organization as a whole. The research should consider a broad range of potential effects that unions can have.

>To the extent that public policy decisions make it more difficult for unions to organize employees, they reduce the competition that nonunion employers feel and reduce the incentives for these firms to maintain good human resource practices. Policymakers should consider these costs in their decisionmaking.

>For unions that provide extensive training such as the skilled trades, public policy decisions that make it more difficult for them to retain their members (i.e., make it easier for workers to go to the nonunion sector) may eventually make it impossible for those unions to provide training because they will be unable to recoup the costs through dues. Again, this is an important costs that should be included in policy decisions.

>Unions should be made an active partner in government training programs, especially for displaced workers.

>Where unions represent occupations where skills are general and where employers therefore have no incentive to provide training, unions should be encouraged to help take up the training function. More government training grants should be made available for that purpose.

Ultimately, however, the importance of unions in society lies more in their noneconomic role, as a protector of worker rights and interests and as a means for employees to influence decisions at the workplace. The argument for unions may be persuasive even if we find that they impose costs on efficiency and workforce quality.

NOTES

1. It is also the case that by pushing up labor costs, unions reduce employment in the union sector. By adding job seekers to the nonunion sector, unions should have some negative effect on wages there. This effect appears to be negligible, however.

2. Levy (1987) suggests that family income did not decline in this period because so many more families added a second worker. He also argues that growth in the inequality of family income was less severe because of adjustments in family working habits (e.g., wives of wealthy families tended to drop out of the labor force and stay home).

3. This change over time is consistent with a model where employers worked to get rid of those unions that had become a disproportionate burden to productivity.

4. Addison and Hirsch (1989) argue that the presence of such a shock effect may be due to a selection bias. Only the most successful union firms adjust to this shock of higher labor costs. The others fail, dropping out of the sample, and making average union productivity higher. But such a selection effect also operates for the nonunion sector in that the least productive nonunion firms also go under.

5. While management could learn about problems from quits, especially if they used exit interviews, union voice provides a potentially more useful mechanism because it presents the views of more average workers (rather than weighting heavily those of problem workers as quits do) and provides that information in many cases before problems become acute.

6. They also conclude that more grievances are associated with lower productivity, but that conclusion does not suggest that grievance procedures per se reduce productivity. Rather, higher grievance rates seem to signal underlying problems in the workplace which reduce productivity. Ichniowsky (1986) finds, for example, that productivity is lower in the nonunion plant without grievance procedures when compared to union plants with them in the same firm.

7. Those who have used the procedure have lower performance evaluations and promotion rates than those who did not. Some managers have suggested that this result may be due to the fact that the introduction of grievance procedures caused them to change their evaluation and promotion procedures, but the assumption is still that those using grievance procedures are poorer employees.

8. It is possible to think of alternative methods of providing such skills. In theory, workers could borrow to pay for such training from schools, but imperfections in capital markets make it difficult to borrow sufficient amounts to pay for the complete training costs. Further, construction firms which are the main employers of the building trades often cannot provide the continuity of employment necessary for such training (see below). In practice, the programs are funded by employer's "cents per hour" contribution to the funds. Such contributions are in part the result of union bargaining power which could be used for other purposes (such as higher wages) and therefore is appropriately thought of as an investment by the unions.

9. By fostering internal labor markets among other employers, they also reduce the opportunities for workers to move elsewhere and take their training with them.

10. Because these skills are general, firms might not voluntarily retrain their own workers even when the premium for skill on the outside market exceeded the net cost of retraining unless there was some way for the firm to capture some of the benefits from its investment in general skills. Again, unions provide the internal labor markets which it possible to retain employees and that investment. In such situations, unions and their internal labor markets make possible a less-costly acquisition of skill. Similarly, some firms might not provide training unless pushed by a union even where it would be cost-effective because of institutional resistance to taking on a new function like retraining.

REFERENCES

Abowd, John M., "Collective Bargaining and the Division of the Value of the Enterprise," (Cambridge, MA: NBER Paper No. 2137, 1987).

Acs, Zoltan J. and David B. Audretsch, "Innovation in Large and Small Firms," Economic Letters, Vol. 23, 1987, pp. 109-112.

Adams, J. Stacy., "Toward An Understanding of Inequity," Journal of Abnormal and Social Psychology, Vol. 67, 1963, pp. 422-436.

Addison, John T. and Barry T. Hirsch, "Union Effects on Productivity, Profits, and Growth: Has the Long Run Arrived?" Journal of Labor Economics, Vol. 7 No. 1, 1989, pp. 72-105.

Allen, Steven G., "Trade Unions, Absenteeism, and Exit-Voice," Industrial and Labor Relations Review, Vol. 37, April 1984, pp. 331-345.

________________, "Unionized Construction Workers Are More Productive," Quarterly Journal of Economics, Vol. 99. May 1984, pp. 51-74.

________________, "Productivity Levels and Productivity Change Under Unionism," Industrial Relations, Vol. 27, Winter 1988, pp. 94-113.

Becker, Gary S., Human Capital: A Theoretical and Empirical Analysis (NY: Columbia University Press, 1975).

Bemmels, Brian, "How Unions Affect Productivity in Manufacturing Plants," Industrial and Labor Relations Review, Vol. 40, January 1987, pp. 241-253.

Blau, Francine D. and Lawrence M. Kahn, "Unionism, Seniority, and Turnover," Industrial Relations, Vol. 22, Fall 1983, pp. 362-373.

Brown, Charles and James Medoff, "Trade Unions in the Production Process," Journal of Political Economy, Vol. 86, June 1978, pp. 355-378.

Brown, Claire and Michael Reich, "When Does Union-Management Cooperation Work? A Look at NUMMI and GM-Van Nyes." U.C. Berkeley, Institute of Industrial Relations Working Paper, 1988.

Brown, James N. and Orley Ashenfelter, "Testing the Efficiency of Employment Contracts," Journal of Political Economy, Vol. 94, June 1986, pp. s40-s87.

Business Week, "The New Industrial Relations," 1981.

Cappelli, Peter, "Plant-Level Concession Bargaining," Industrial and Labor Relations Review, Vol. 38, October 1985, pp. 90-104.

________________, "Airlines," in David Lipsky and Clifford B. Donn, Collective Bargaining in U.S. Industry (Lexington, MA: Lexington Books, 1987).

________________ and Robert B. McKersie, "Management Strategies and the Redesign of Workrules," Journal of Management Studies, Vol. 24, September 1987, pp. 441-462.

Clark, Kim B., "The Impact of Unionization on Productivity: A Case Study," Industrial and Labor Relations Review, Vol. 33, July 1980, pp. 451-469.

_____________, "Unionization and Productivity: Micro-Econometric Evidence," Quarterly Journal of Economics, Vol. 95, December 1980, pp. 613-639.

Connolly, Robert A., Bart T. Hirsch, and Mark Hirschey, "Union Rent Seeking, Intangible Capital, and Market Value of the Firm," Review of Economics and Statistics, Vol. 68, November 1986, pp. 567-577.

DeFina, Robert H., "Unions, Relative Wages, and Efficiency," Journal of Labor Economics, Vol. 1 October 1983, pp. 408-429.

Elbaum, Bernard, "The Making and Shaping of Job and Pay Structures in the Iron and Steel Industries," In Paul Osterman (ed.), Internal Labor Markets. (Cambridge, MA: MIT Press, 1984.)

Feller, David E. "A General Theory of the Collective Bargaining Agreement," California Law Review, Vol. 63 No.3, 1973, pp. 663-851.

Ferman, Lewis, Michelle Hoyman, Ernest Savoie, and Joel Cutcher-Gershelfeld, Union-Management Programs for the Training and Personal Development of Workers. (Ithaca, NY: ILR Press, forthcoming.)

Fiorito, Jack, Christopher Lowman, and Ernest O. Nelson, "The Impact of Human Resource Policies on Union Organizing," Industrial Relations, Vol. 26, Spring 1987, pp. 113-126.

Foulkes, Fred K., Personnel Policies in Large, Nonunion Companies. (Englewood Cliffs, NJ: Prentice-Hall, 1980.)

Freedman, Audrey, The New Look in Employee Relations. (New York: The Conference Board, 1985.)

Freeman, Richard B., "The Exit-Voice Tradeoff In the Labor Market: Unionism, Job Tenure, Quits, and Separations," Quarterly Journal of Economics, Vol. 94, June 1980, pp. 643-674.

__________________ and James Medoff, "The Impact of Collective Bargaining: Illusion or Reality?" in U.S. Industrial Relations 1950-1980: A Critical Assessment. (Madison, WI: IRRA, 1981).

___________________________________, What Do Unions Do? (Boston: Basic Books, 1984.)

Galbraith, John K., The New Industrial State. (Boston: Houghton Mifflin, 1978 3rd ed.)

Hirsch, Barry T. and John T. Addison, The Economic Analysis of Unions. (Boston: Allen and Unwin, 1986.)

Ichniowski, Casey and David Lewin, "Grievance Procedures and Firm Performance," in Human Resources and the Performance of the Firm. (Madison, WI: IRRA, 1988.)

Kahn, Lawrence M. "Union Spillover Effects on Unorganized Labor Markets," Journal of Human Resources, Vol. 15, Winter 1980, pp. 87-98.

Kochan, Thomas A., "How American Workers View Labor Unions," Monthly Labor Review, Vol. 102, April 1979, pp. 23-31.

Kuhn, Peter, "Union Productivity Effects and Economic Efficiency," Journal of Labor Research, Vol. 3, Summer 1985, pp. 229-248.

Lazear, Edward P., "Why is There Mandatory Retirement?" Journal of Political Economy, Vol. 87, December 1979, pp. 1261-1284.

Levy, Frank, Dollars and Dreams: The Changing American Income Distribution. New York: Russell Sage Foundation, 1987.

Lewin, David, Journal of Conflict Resolution, 1987.

Lovell, C., Robin C. Sickels, and Roland S. Warren, Jr., "The Effect of Unionism on Labor Productivity: Some Additional Evidence," Journal of Labor Research, Vol. 9, Winter 1988, pp. 53-66.

McKersie, Robert B. and Lawrence Hunter, Productivity Bargaining. (London: MacMillan, 1971.)

Medoff, James, "Layoffs and Alternatives Under Trade Unions in U.S. Manufacturing," Quarterly Journal of Economics, Vol. 69, June 1979, pp. 380-395.

______________ and Katharine Abraham, "Experience, Performance, and Earnings," Quarterly Journal of Economics, Vol. 95, December 1980, pp. 703-736.

Neumann, George R. and Melvin W. Reder, "Output and Strike Activity in U.S. Manufacturing: How Large Are the Losses?" Industrial and Labor Relations Review, Vol. 33, January 1984, pp. 197-211.

Pencavel, John H. An Analysis of the Quit Rate in American Manufacturing. (Princeton, NJ: Industrial Relations Center, Princeton University, 1970.)

Pfeffer, Jeffrey and James Baron, The Externalization of Work in Barry M. Staw and Lawrence Cummings (eds.) Research In Organizational Behavior (1988).

Piore, Michael J. "American Labor and the Industrial Crisis," Challenge, Vol.23 March-April 1982, pp. 5-11.

__________________ and Charles F. Sabel, The Second Industrial Divide. (New York: Basic Books, 1984.)

Slichter, Sumner S., Union Policies and Industrial Management. (Washington, D.C.: The Brookings Institution, 1942.)

Verma, Anil and Thomas A. Kochan, "The Growth and Structure of the Nonunion Sector Within a Firm," Challenges and Choices Facing American Labor. (Cambridge, MA: MIT Press, 1985.)

Weiss, A., "Job Queues and Lay-offs in Labor Markets With Flexible Wages," Journal of Political Economy, Vol. 88, No. 3, June 1980, pp. 526-538.

43. EMPLOYER TRAINING OF WORK-BOUND YOUTH: AN HISTORICAL REVIEW AND NEW RESULTS

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Introduction

In 1988, 2.7 million young people graduated from high school. Fifty eight percent decided to enroll in college, but most of the remaining 1.1 million began their transition to work. One fourth of these work-bound youth do not immediately find work, indicating some difficulty in making the transition. The remaining three fourths, although working, may or may not be found in a job which includes training opportunities or fosters their productivity as workers. This paper addresses questions about the training opportunities and experiences of this important group.

We first describe work-bound youth; that is, individuals who leave high school with the intent of going to work and, at least in the immediate future, do not attend a college or vocational school on a full-time basis. Following the description, we explain how historically this group of young adults has been trained in our society and what has happened to traditional sources of training. In the third section, we take a closer look at who gets training, who provides it, and its consequence for earnings by examining the education, training, and employment experiences of a sample of high school seniors from their graduation in 1972 until 1986. We describe the type, form and source of employer-provided training they received. The last section of the paper raises appropriate policy questions.

A Statistical Profile of Youth

There is a deep national concern about youth who drop out of school, but not enough interest in young adults who, for a variety of reasons, choose not to go on to college immediately after high school graduation. Recently, a report entitled, "The Forgotten Half," focused attention on these individuals, and emphasized the fact that they are a sizable and important part of our population. As large numbers of young women and men make the transition from school to work, the market becomes the first testing place of the products of our schools. We now give a quick statistical portrait of this group.

Today's young people have grown up in more turbulent circumstances than they did in the past:

- The proportion of children involved in a divorce doubled between 1965 and 1980 (Youth Indicators, 1988, p. 10).
- The suicide rate among 15- to 19-year-olds increased from 4 per 100,000 in 1965 to 10 per 100,000 in 1985 (Youth Indicators, 1988, p. 102).
- The number of births among unmarried white 15- to 19-year-old girls increased from 7.9 to 20.5 per 1,000 between 1965 and 1985.
- Among blacks, the number of births per 1,000 unmarried 15- to 19-year old girls was 79.4 in 1985, about the same as it was in 1965.

- In 1985, 43 percent of all black children 18 and under lived in poverty (Wetzel, 1988).
- Fifty six percent of black youth live in central city areas where school dropout rates are much higher than the 20 percent national estimate in 1983.

The educational attainment of new generations of young people rose throughout the post-war period, with the exception of a slowdown during the first half of the 70s. However, the educational achievement of today's high school students, as measured by the National Assessment of Educational Progress, has remained at the same low levels of the early 1970s (Condition of Education, 1990). Employers are able to tell, more than ever before, the basic skill deficiencies of young workers since most jobs require some training or orientation to perform even the simplest tasks (Berlin and Sum, 1988).

The transition from high school to work (or college) is never easy, but for some members of our society it is particularly difficult. Work-bound high school graduates fare better than high school dropouts, but have substantial difficulties compared to their college-going classmates.

As a basis for comparison, it is useful to consider the number of dropouts and their employment prospects. Table 1 presents the number of young people graduating and dropping out of high school. In 1988, for every high school student who dropped out, five graduated. Almost three of the five would go on to college, but the remaining two would enter

Table 1. Employment of High School Graduates and Dropouts

	All Races Number (1,000s)	Employed (percent)	Black Number (1,000s)	Employed (percent)
1988 High School Graduates	2,673		382	
Not enrolled in college	1,098	72	211	55
1987-88 Dropouts	552	43	107	23
1978 High School Graduates	3,161		347	
Not enrolled in college	1,577	74	186	46
1977-78 Dropouts	822	40	172	40

Source: U.S. Department of Labor, 1989 and 1979.

the workforce. Only 43 percent of the dropouts found work. Similarly, for every black high school student who dropped out, four graduated, and almost two would go on to college. Only 23 percent of the black dropouts found jobs, and one in four of these jobs were part-time. Another 16 percent were looking for work, but an astonishing 61 percent were doing neither.

In some ways, these rates are better than what occurred in 1978. In that year, for every high school student who dropped out, only four graduated. The ratio for black students was far worse, with only two graduates for every dropout. On the other hand, 40 percent of black high school dropout were employed, better than the current 23 percent. Since 1978, the number of dropouts has fallen relative to the number of graduates, but the proportion of the remaining dropouts employed have also fallen. Today's dropouts, particularly black dropouts, are those who appear to have the least success in making the transition to work.

At the other end of the line of young people, the fraction of high school graduates going straight to college has increased from 50 to 59 percent between 1978 and 1988. We do not know the types of postsecondary institutions attended by the high school class of 1988; but among 1980 seniors, 31 percent enrolled in a 4-year colleges, and 15 percent in 2-year colleges immediately following graduation (U.S. Department of Education, 1987a, p. 80).

On the other hand, the number of high school graduates not going on to college has decreased. From 1978 to 1988 the proportion fell from 50 to 41 percent. For blacks it has remained near 55 percent. A few, about 1 in 10, enroll in a vocational school, but most seek work. In 1988, 72 percent of work-bound high school graduates had work in the October following their graduation. Among work-bound black high school graduates the proportion with jobs improved from 46 to 55 percent between 1978 and 1988. About one in four high school graduates who are not going on to college do not find work immediately. About one in two black graduates do not. Fifteen percent of all recent graduates who are working are in part-time jobs.

The median income for young male and female, full-time workers declined between 1970 and 1986 after adjustment for inflation. In 1986, young males between the ages of 20-24, who had high school diplomas and had jobs earned 28 percent less in constant dollars than the comparable group of youth in 1973. The income drop was 44 percent for blacks, as opposed to 24 percent for whites. The decline was even sharper for dropouts.

Employers state that new work-bound high school graduates are not qualified for even the lowest level jobs, and that the high school diploma is no longer certification of competency in the basic skills (Sherman, 1983; Eurich, 1985). However, employers still use it as a minimum educational standard for new workers, and continue to reward high school graduates with higher wages than dropouts (Borus, 1984). The diploma may nevertheless illustrate an individual's ability to complete a course of action and to cope with the rules of an institution, both of which are workplace requirements. Indeed, according to a recent study conducted by J. H. Laurence for the Defense Department, "screening on the basis of an education credential is the most efficient and effective method existing today to curb attrition" (Laurence, 1987).

Each year roughly 1 million young people will graduate from high school and try to begin their lives as workers. There are disturbing signs that they may have major difficulties finding a job, remaining with it, and being productive. As information and technology become increasingly important in the U.S. economy, so does the education and training of its workers. Those without it are likely to find themselves with low earnings, jobs that don't last, and few new prospects. Their fate may well be analogous to that of today's high school drop-outs.

The U.S. postsecondary education system is large, diverse, and provides a wealth of opportunities. It provides young people with the chance to experiment, to find what it is they enjoy, what they would like to learn, and ultimately how to turn that learning to productive use in our diverse economy. Some of those experiments will fail, but those young people are free to try again. However, the opportunities offered by traditional postsecondary education may not be useful to all high school graduates. For many, high school was a struggle, and the thought of more time spent in the classroom is not attractive.

Many learn better on the job or when the skills being taught have a concrete and clear connection to a work task. Job training may be more suited to their needs than additional traditional education, but in all cases, job training should be built on a solid foundation of basic skills. Current policies need to be changed to encourage additional education and training for these work-bound youths.

However, before we look for answers, it is important that we understand how work-bound youth in the past made the transition from school to work. What type of institutions or programs existed in the past? What nonwork structures existed in society that enabled youth to learn skills and work habits?

Origins of Occupational Training

For most of the 19th century, schools played a rather minor role in preparing youth for specific occupations. Most urban youths went to school for 4 or 5 years, usually leaving school by age 12 or 13 to receive occupational training through apprenticeships or on-the-job training (Kantor, 1982). Towards the end of the 19th century, pressure from businessmen, labor leaders, farm spokesmen, and educators forced the schools to respond to the demands of the economy. By 1910, it was agreed that some form of vocational education was needed. Finally, in 1917, Congress passed the Smith-Hughes Act, allocating federal funds for vocational training "of less than college grade" in trade and industrial subjects, home economics, and agriculture for students over 14 years old enrolled in public schools. Advocates of vocational education argued that the result was "a transformed high school, in which fewer students dropped out from boredom or frustration. Pupils gained skills that made them more productive and well-paid workers, and the schools meshed with the economy as socially efficient institutions" (Kanter, 1982).

On the other hand, "opponents of the establishment of vocational schools voiced their concerns that a differentiated system of schooling sorted and trained individuals for their niches in the economy, and that businessmen turned to education as a means of socializing and disciplining employees to their new roles" (Kantor, 1982). However, we have to keep in mind that in the late 19th century and early 20th centuries, the economy was dominated by small enterprises, and most schools were one-room rural schools. Therefore, a majority of young adults acquired their training outside the school systems, namely through their families, apprenticeship programs, and simply by working. Let us briefly review some of the important sources of training.

Apprenticeship

Since the beginning of time, skills have been transferred from father to son. Teaching skills to youth through artisans goes back at least to the days of Hammurabi. During the Middle Ages, training took the form of indenture and the master-apprentice relationship.

Indenture, the contractual agreement between two people in which one, usually a craftsman, agreed to teach skills to another, usually a youth, was brought to the New World by craft workers. Unfortunately, this practice was corrupted by the "poor laws," this requiring poor children, many less than 10 years old, to serve their teacher for many more years than necessary to learn the skill.

The first legislation in the U.S. to promote an organized system of apprenticeship was enacted in Wisconsin in 1911, placed apprenticeship under an industrial commission, and required 5 hours a week of classroom instruction of each apprentice. Today's nationwide system came into being after the passage of the Fitzgerald Act 1937. The act promotes "the furtherance of labor standards necessary to safeguard the welfare of apprentices and to cooperate with the States in the promotion of such standards."

Most modern apprenticeships range from 3 to 5 years. Programs include planned on-the-job training in conjunction with related classroom instruction, generally 144 hours each year. Apprentices earn while they learn on the job, at progressive wage rates. More than 230,000 persons are registered as apprentices in more than 700 crafts and skills (U.S. Department of Labor, 1986). Requirements for entry vary from trade to trade, program to program, and plan to plan. However, they usually cover four factors: age, education, aptitude, and physical condition. Minimum age for an apprentice is 16 years, though most programs set the minimum age at 18, because of insurance restrictions. The minimum level of education also varies, but usually a high school diploma or its equivalent is required. Most apprenticeship programs also expect applicants to pass appropriately validated aptitude tests. One such test is the Specific Aptitude Test Battery (SATB) administered by the state Employment Service agencies. If an individual meets all the above requirements, he or she gets on a register, but this constitutes only half of the process. The other half is being placed in a program. The wait on a register can last months or even years, depending on the number of qualified applicants and the number of openings.

While apprenticeship is believed to provide training for less than one percent of the work-bound youths who select that route as a means of acquiring skills, it is impossible to cite exact numbers of apprenticeships for two reasons. First, since 1979, the Employment and Training Administration of the U.S. Department of Labor has stopped collecting data on the training status of registered apprentices. Second, it has been estimated that only about one-half of all apprenticeship programs are registered with Federal and State apprenticeship agencies.

Employer-Sponsored Training

Historically, employer-sponsored training has been narrowly defined and mostly offered to employees who were more likely to stay with the company. In the early 19th century, various work places attempted to provide education to the workers, as was done in the mills of Lowell, Massachusetts. During the latter part of that century, every educational institution in the U.S. was concerned with the development of programs that would be responsive to the industrial needs of the

Nation. It is at the turn of the century that corporations began setting up their training and education centers. From 35 corporations in 1913, the number of corporations with classrooms grew to 200 within a couple of years (Eurich, 1985).

In addition to the growth of corporate classrooms over the years, higher level employees have received a larger share of education and training (Lusterman, 1985). There is some evidence that employers invest heavily in management training for two reasons. They believe that investing in higher level employees has a bigger payoff than investing in entry-level workers. They also know that entry-level workers are more likely to move from one firm to another than are employees who have been with a firm 10 to 15 years (Vaughan & Berryman, 1989). Therefore, employer-sponsored education and training programs are not being provided for younger workers seeking entry-level career positions (Zemsky, Meyerson, Tierney, and Berg, 1983).

Public Training Programs

Historically, many training programs were initiated by the federal government in response to concerns over national skill shortages in the work force. The goal of the 1862 Merrill Land Grant College Act was to increase the supply of persons trained in agriculture and mechanical arts. The Vocational Rehabilitation Act of 1918 sought to provide training to World War I veterans. In both cases, the federal government policy was to use training programs to address manpower problems. Later, the Civilian Conservation Corps (CCC) of the Roosevelt era became the prototype of federal training programs. The Work Progress

Administration was put in charge of programs that trained the unemployed for public sector activities.

Beginning in the 1950s, the federal government funded a number of training programs to meet, once again, the skill needs of workers in specific fields. The Health Amendments Act of 1956, for example, aimed at training military technicians. Eventually, the Manpower Development and Training Act (MDTA) was passed to ease unemployment. Although these acts were not primarily for young adults, by the mid-1960s, 18.3 percent of the participants were 19 years old or younger. The Economic Opportunity Act of 1964 enabled the establishment of Neighborhood Youth Corps and the Job Corps training programs for youth. In 1971, the federal government took the lead in creating jobs for the unemployed. With the passage of the Comprehensive Employment and Training Act (CETA) in 1973, and its re-authorization in 1978, 725,000 jobs were created. Legislative acts that followed the CETA were modifications of the original act with increased emphasis on youth and more involvement of the private sector.

The Job Corps, another attempt at training youths, gave way to the Job Training Partnership Act (JTPA) of 1982. The JTPA is the most recent attempt at addressing high youth unemployment through training for jobs that have been identified by private industry councils. Programs operating with JTPA funds have now begun to emphasize the importance of literacy and other basic educational skills.

A cursory review of manpower development acts reveals that some of these indeed created jobs and trained youth. Some even mandated collaboration between the public and private sectors. Still others involved schools and communities in the education and training of youth. However, the central problem -- the lack of trained workers to meet the needs of the economy -- remains unsolved.

Educational Institutions

Before 1880 industrial education had little impact on the public schools and as late as 1888 only a few schools were primarily devoted to training for the trades. Although the movement for occupational education in the public schools developed slowly in America, many American colleges and universities had long proclaimed vocational objectives. The main burst of university support for popular vocational education occurred between 1900 and 1930 (Kett, 1988). Even in 1890 few people suspected the presence of widespread demand for vocational instruction in routine office and factory jobs. Most ordinary vocational skills had been learned on the job rather than in schools and, few public or private schools addressed occupational education for the masses. The first proprietary school was set up in the 1850s and served adult students in evening classes. By 1890s enrollments in these schools rose to over 90,000 students (Kett, 1989). Although some of these proprietary schools called themselves colleges, their basic function was to train workers for entry-level positions. In the 1880s and 1890s, there was a noticeable growth in the number of proprietary schools. Although they did not offer professional education, they did use innovative techniques for popular education, including instruction by mail. The International Correspondence Schools of Scranton became a large enterprise by the early 1900s, with one hundred thousand new students enrolling each year. By 1910 the cumulative enrollments of ICS was one million and by 1930 it was over four million (Kett, 1989).

Today, these proprietary schools are for-profit and constitute a growing segment among providers of education. They are often organizations with a single curriculum, and they offer courses of short duration to enable students to acquire skills with a minimum loss of foregone income. Year-around operations and frequent class starts are the norm.

There are approximately 6000 proprietary schools including correspondence schools. Since these schools do not receive public funds, the tuition, on the whole, is expensive. The average cost of a proprietary school program in 1980-1981, was $2,200 for an average of 981 hours of instruction, as opposed to an average cost of $593 for an average of 1,324 hours of instruction in public non-college programs. The growth of these private proprietary schools raise public concern because students often finance their education through federal aid programs.

A Closer Look at Who Participates in Employer-Provided Training and its Consequence for Earnings[1]

Are those non-college bound youth who find work participating in employer-provided training? Which employers are providing the training? What are the earnings consequences of the training? Answers to these questions may be found in the U.S. Department of Education's National Longitudinal Study of the High School Class of 1972 (NLS-72). As its name implies, this survey consists of a nationally representative sample of high school seniors in 1972. The same sample of seniors was resurveyed on a regular basis until 1986 (U.S. Department of Education, 1981, 1987b). The results provide evidence about the education and employer-provided job training experiences of the 12,841 individuals who participated in the 1986 survey. In particular, the results allow us to contrast the participation in employer-provided training of the work-bound to those who were either college-bound or non-degree participants in post-secondary education.[2]

All members of this sample are high school graduates, but not all went on to college or other forms of post-secondary education. Over 60 percent indicated that they had at least some education beyond high school, and somewhat less than half of these finished college. This leaves 35-40 percent with no post-secondary education involvement at all. It is this group that compose the work-bound. Labor force participation among members of the class of 72 was high -- in 1986 93.7 percent of men and 74.9 percent of women reported holding a full-time job since 1979. The labor force participation rate was lowest among the work-bound, 80 percent, and highest among the college bound, 90 percent. Among the work-bound in the labor force 35 percent indicated they had participated in some form of employer-provided training on their last full-time job.

Individuals were more likely to report participation in employer-provided training if they had been in their job for a year or more. The likelihood of participating in training increases from 13 percent for those who just started a full-time job, to 29 percent for those who have been in the job for less than a year, and to 37 percent for those who have been in the job for more than a year.[3] Evidently, most but not all training occurs within the first year on the job.[4]

A widely cited result is that those who have more education are more likely to receive training. This relationship holds in this sample but to a lesser extent than one might expect. As was indicated earlier, 37 percent of the work-bound sample with a year or more on the job reported participation in some form of employer-provided training. The comparable numbers for non-degree participants and the college-bound are 51 percent and 58 percent, respectively. Employers appear more likely to invest in training those who already have invested in educating themselves.

Women were somewhat more likely to report having participated in on-the-job training than men -- among the work-bound 38 percent women and 33 percent of men. However, the duration of training for women is much shorter -- 4.9 full-time week equivalents versus 11.5 for men.

Sixty-one percent of those employed in the public sector compared to 45 percent of those in the private sector participated in training. The difference between public and private employers was particularly large for the work-bound where 56 percent of those with public employers and 36 percent of those with private employers participated in some form of employer-provided training. In contrast, among the college bound 65 percent of the public sector and 57 percent of the private sector received training. For work-bound men, the differential was particularly large -- 61 percent and 33 percent, respectively, of those in public and private sector jobs participated in training.

Employer-provided training programs take many forms. The forms we were able to identify include (in order of overall frequency of incidence) (1) during working hours, on premises, (2) during working hours, off premises, (3) informal on-the-job training (OJT), (4) tuition and/or financial assistance for attending educational institutions after working hours, and (5) formal registered apprenticeships. About 23 percent of the work-bound with more than a year on the job reported participating in training during working hours, on premises. Only 13 percent reported participating in a training program off premises.

Some employers offer tuition and/or financial assistance for attending educational institutions after working hours. Among the college-bound, 15.7 percent reported receiving this type of assistance. Among the non-degree participants, the proportion is 13.8 percent, and among the work-bound, 23 percent.[5]

Clearly, the work-bound are less likely to participate in employer-provided training than the college bound, and the difference is larger in private firms. Although the public sector workforce is more educated than its private sector counterpart, the public sector is more likely to train its less educated members.

There is an earnings pay-off to training. Average earnings increase with educational level -- an average of $404 and $536 per week in 1985 for the work-bound and college-bound, respectively. Within educational classes, those in private sector jobs earn more than those in the public sector. For the work-bound average earnings in the private and public sectors are $392 and $364 per week, respectively.[6] However, within each sector those who have received training earn more than those who have not. In the private sector, the numbers for the work-bound are $407 and $383 for those with and without employer-provided training, a 6.3 percent differential. In the public sector the amounts for the work-bound are $394 and $326 for those with and without training, a 21 percent differential. Workers with employer-provided training earn more than those without it.

Some caution should be used in interpreting these differences. The relationship between education and training is likely also to hold for ability and training. Therefore, the earnings differential is likely to overstate the direct consequence of training for a particular individual. We estimate that the returns to training are large enough so that even if our estimates are halved, the rate of return still indicates that training is a profitable investment.

Discussion and Recommendations

Training has been a step child of the learning society. Historically, work-bound youth acquired their training informally, and it was associated with "hands-on" learning. However, as the economy and nature of skill acquisition changed, training became more and more formalized and more frequently acquired. It also became more dependent on the basic educational competencies of the workers. Individuals who are able to read, write and compute with ease become the ones to be trained.

Training is a human capital investment that increasingly resembles formal education, so it is not surprising that those who receive more formal education also receive more training. However, training could, in principle, be structured as an alternative to formal education. For those with a comparative disadvantage at learning in the classroom, it could be a viable avenue to compete with those groups who start work with more formal education.

However, employer-provided training does not appear to be an alternative to formal education for acquiring productive skills. Our analysis shows, as have others, that work-bound youth receive less training than either non-degree participants or the college-bound. The probability of a work-bound youth getting any kind of training from any source is very low -- about 1 in 3.[7] On the other hand, a work-bound youth who receives employer-provided training has substantially higher earnings than those who do not. This is not to say that work-bound youth are relatively "untrainable" or that it will not pay them to seek training. The public sector employs a much smaller percentage of the work-bound than the private sector, yet it is more likely to educate or train them.

What about training for women? Although work-bound men and women in the private sector are equally likely to report participation in training, the duration for women is from 3/4 to 1/2 that of men. Public sector employees are generally more likely to participate in training than their private sector counterparts. However, public sector women are less likely to participate in training than public sector men. As women shoulder a greater portion of the burden of care for children and the elderly, the time at which training is offered may be more of an obstacle to long term employment of women. However, we believe relatively little training is offered after work hours rather than during the workday, so "time constraints" are unlikely to explain the substantially smaller duration of training for women. Nor are these differences explained by differences in the occupational requirements of jobs held by men and women; within broad occupational classifications the duration of training for women remains substantially shorter than it is for men. Apparently, employers believe that the benefits from training are less for women than for men.

Regardless of gender, twice as many college graduates report receiving training during work hours, off-site, than work-bound youth. From the information we have, we do not know whether on- or off-site training is more expensive to employers. However, we do know that the cost of training college graduates (during work hours) is greater than it is for workers with less education and pay. Thus, the greater relative use of off-site training for college graduates suggests that it is relatively more productive to train college graduates off-site.

None of these analyses enable us to see any reason why public or private policies should be altered to compensate for the inequalities. We have evidence connecting recent participation in training to current earnings, and it is likely that it also is related to the growth in earnings. Knowledge is being generated at a faster rate than in the past and large gaps in basic education or technical skills is likely to hinder the future employment stability of individuals and hamper national economic growth.

A corrective step would involve substantially more training than is currently received by many in our work force. Before taking this step a number of questions deserve answers. Among them, the following:

1. If work-bound youth get the least amount of training, regardless of where they work and what work they do, and yet they make up the largest group of entry-level workers, would additional training improve their productivity?
2. Is it possible to design training programs that compensate for the educational deficiencies individuals have? How can training programs address the issue of educational pre-requisites?
3. If the future work force will have ever more women, and time remains a scarce commodity for those who are primary care takers as well as employees, can we develop training strategies that will optimize their productivity with the restraints of their dual function?

NOTES

1. A detailed but more technical discussion of these and other results can be found in Alsalam (1989).

2. We define the "college-bound" as those who eventually graduate from college. We define the "non-degree participants" as those who participate in the post-secondary education system, but do not receive a bachelor's degree. They may receive licenses, certificates, or associate degrees.

3. There are two opposing forces are work. First, employers want their employees to become trained and more productive quickly and so will want to train their employees soon after they start. Second, training cannot precede the new technology or skill the training is designed to impart, so the longer an employee has been with a particular employer the more likely he is of participating in training. The first determines the participation rate within the first six months to a year after starting work. The second determines the rate of increase among workers with longer tenure.

4. Our estimates of the prevalence of employer provided training is likely to be about 20 percent higher than estimates from other surveys based on participation in training within the first year on the job, and much higher than estimates based on participation within the last year independent of starting date.

5. The work-bound are by our definition those who have had no involvement in post-secondary education and so they are very unlikely to have received tuition/financial assistance -- in fact, only 2.8% have.

6. The self-employed earn the most and pull the work-bound average up to $404 per week.

7. Moreover, as a work-bound youth grows older, the likelihood he will get training falls. Time and age does not mitigate initial differences in the likelihood of receiving training between educational classes.

REFERENCES

Alsalam, Nabeel. "Job Training of the Work-Bound Graduates of the High School Class of 1972: A Description with Contrasts and Consequences." Working Paper, U.S. Department of Education, National Center for Education Statistics, 1989.

Berlin, Gordon and Andrew Sum. *Toward A More Perfect Union: Basic Skills, Poor Families, and Our Economic Future*, New York: Ford Foundation, 1988.

Borus, Michael, E. ed. *Youth and the Labor Market: Analysis of the National Longitudinal Survey*, Michigan: The W. E. UpJohn Institute for Employment Research, 1984.

Eurich, N. P. *Corporate Classrooms: The Learning Business*. A Carnegie Foundation Special Report. Princeton, NJ: Princeton University Press, 1985.

The Forgotten Half: Pathways to Success for American's Youth and Young Families. The William T. Grant Foundation Commission on Work, Family and Citizenship. Final Report. Washington, DC: The Institute for Educational Leadership, November 1988.

Kantor, Harvey and Tyack B. David, ed. *Work, Youth and Schooling: Historical Perspectives on Vocationalism in American Education*. Stanford University Press, 1982.

Kett, Joseph E. "From Useful Knowledge to Vocational Education 1860-1930." Working Draft. New York: National Center for Education and Employment, 1989.

Laurence, J. H. "Military enlistment policy and education credentials: Evaluation and Improvement." Final Report 87-33. HumRRO FR-PRD-87-33. Alexandria, VA: Human Resource Research Organization, 1987.

Lusterman, Seymour. Trends in Corporate Education and Training. Research Report 870. New York: The Conference Board, 1985.

Sherman, Susan W. ed. Education for Tomorrow's Jobs. National Research Council. Washington, DC: National Academy Press, 1983.

U.S. Department of Education, National Center for Education Statistics. National Longitudinal Study: Base Year (1972) through Forth Follow-Up (1979) Data File Users Manual, Volume III. Washington, DC: U.S. Government Printing Office, 1981.

U.S. Department of Education, National Center for Education Statistics. Transition from High School to Postsecondary Education: Analytical Studies. CS 87-309c, Washington, DC: U.S. Government Printing Office, 1987.

U.S. Department of Education. The National Longitudinal Study of the High School Class of 1972 (NLS-72) Fifth Follow-Up (1986) Data File User's Manual. Washington, DC: National Center for Education Statistics. U.S. Government Printing Office, December 1987.

U.S. Department of Education, Office of Educational Research and Improvement. Youth Indicators 1988: Trends in the Well-Being of American Youth. Washington, DC: U.S. Government Printing Office, 1988.

U.S. Department of Education, National Center for Education Statistics. The Condition of Education (1989 Edition) K. Baker and G. Rodgers (eds.). Washington, DC: U.S. Government of Printing Office, 1990.

U.S. Department of Labor, Bureau of Labor Statistics. Students, Graduates, and Dropouts in the Labor Market, October 1978. Special Labor Force Report 223, October 1979.

U.S. Department of Labor, Employment and Training Administration. Apprenticeship Program Highlights. Fact Sheet No. ETA-86-5, 1986.

U.S. Department of Labor, Bureau of Labor Statistics. "Employment Status of School Age Youth, High School Graduates and Dropouts," Unpublished tabulations, June 1989.

Vaughan, Roger J. and Sue Berryman. "Employer-Sponsored Training: Current Status, Future Possibilities." Paper prepared for the Conference on Employer-Sponsored Training. New York. The Institute on Education and the Economy, February 1989.

Wetzel, J. R. American Youth: A Statistical Snapshot. The William T. Grant Foundation Commission on Work, Family and Citizenship. Washington, DC: June 1987.

Zemsky, Robert, Martin Meyerson, Michael Tierney and Ivar Berg. "Training's Benchmarks: A Statistical Sketch of Employer-Provided Training and Education 1969-1981." Report submitted to the National Institute of Education in partial fulfillment of Contract No. 400-81-0025. PA: University of Pennsylvania, June 1983.

44. DATA NEEDS FOR LABOR MARKET ANALYSIS

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Opinions stated in this document do not necessarily represent the official position or policy of the U.S. Department of Labor, Commission on Workforce Quality and Labor Market Efficiency.

44. DATA NEEDS FOR LABOR MARKET ANALYSIS

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Any examination of data needs for labor market analysis requires taking into account a variety of considerations:

* Who are the users of existing data?

* Do current data sets adequately fit user needs? In particular, to what extent have the methodological approaches adopted by data users been compromised by the nature of existing data?

* How can existing data sets be revised or otherwise improved to take problems of method into account? A related point is whether or not existing data sets are being used to their full potential. This may involve issues of data accessibility or employing advanced computer technology to link files in new and useful ways.

* What are the lines of inquiry for which empirical estimates cannot be generated owing to a total lack of data; a lack of data of sufficient quality; or a lack of data which appropriately measures the relevant concepts?

Although these considerations indicate an ambitious agenda, the goals of this paper are more modest and realistic. Rather than develop a broad theoretical model which attempts to capture all of the above considerations, the design of this paper is to begin with a view of specific data needs and use the above considerations to justify the accompanying recommendations.

In developing the recommendations which follow, opinions were solicited from a wide spectrum of data users including government officials and the authors of our commissioned papers. Another source of information were the numerous reports issued by various intergovernmental agency groups, task forces, and other organizations which have dealt with specific data issues. The general conclusions which have emerged from this effort can be summarized as follows:

1. The Department of Labor needs to improve its ability to generate timely labor market information on policy issues.

2. Labor market information with demographic and socioeconomic detail on individuals, especially longitudinal panel data, is invaluable to both researchers and policymakers and needs to be strongly supported.

3. There is a serious need to expand our base of knowledge on the role of firms in labor markets. While much useful information exists, there are significant gaps in our current data collection efforts.

4. There is a growing consensus that certain questions such as the extent and quality of worker training can only be effectively addressed through data sets which contain information on both firms and workers within those firms. Research on the viability and cost effectiveness of such data collection efforts needs to be conducted.

5. There is a significant commonality of interest existing in the world of data collection, presentation and analysis--ties that bring together the interests of data users and providers alike. Issues such as the latest developments in longitudinal analysis or the tradeoffs between the development of micro data files and confidentiality can be usefully explored in a forum bringing together the relevant users and providers of labor market data.

The recommendations given next follow this broad framework. The discussion justifying each recommendation builds upon a variety of concepts. Two which are useful to mention at this point are part of the nomenclature used to describe the characteristics of data sets--the sampling frame and the sampling view. The former determines the relevant population under discussion. For example, the Current Population Survey (CPS) is a nationally representative sample of individuals whereas the Longitudinal Establishment Data file is a representative sample of firms in the manufacturing sector.

A potentially important and distinguishing feature of sampling frames is whether or not the survey depends on the recall of individuals--asking respondents to recall or estimate a concept to the best of their knowledge--or if the survey relies on the establishment records of a firm. The former is usually a characteristic of surveys of households; the latter of establishment surveys.

The sampling view determines how the data are collected and presented. For example, the data could represent a summary of activity at a point in time--that is, a cross-sectional snapshot; or it could be a collection of retrospective information collected at a survey date--such as the information on work experience the previous calendar year collected in the annual supplement to the March CPS; or possibly a panel view in which the same individuals are reinterviewed over an extended period of time--that is, a longitudinal data set. In the discussion which follows these terms associated with sampling frames and sampling views are used frequently.

I. The Need to Inform Policymakers in a Timely Fashion

Some of the most frequent users of labor market information are agencies within the government, including the Council of Economic Advisors to the President, Congressional committees, as well as policy staffs located in the various agencies of government. Their needs range from long-range evaluation of government interventions in the labor market to much more short-run concerns such as obtaining timely information on current trends in labor markets. While much of this report points to the need to improve the availability and quality of data for long-term research and policy analysis, there also exists an important gap in our ability to generate timely cross-sectional information on a wide variety of specialized labor market issues.

This judgement is not meant to imply there is currently no such capability. On the contrary, the Bureau of Labor Statistics has a proud tradition of being able to provide accurate information, rich in detail, on a highly diverse set of issues in a quick and timely fashion. In particular, the Bureau has set up a sampling frame of establishments permitting quick response surveys be taken of firms. In the past two years, this has included, among others, surveys on child care practices and drug testing programs in the workplace.

However, the ability of the Bureau to respond quickly to requests which require information on households can be limited. The Bureau's source of information is the Current Population Survey (CPS) which is conducted by the Bureau of the Census and is based on a sampling frame of household addresses drawn from the Decennial Census. Unless the information can be inferred from answers to the regular battery of questions in the monthly CPS, the Bureau must contract with the Census Bureau to conduct a supplement to the survey. The amount of time required to include the relevant questions on supplements to the survey, collect, process and analyze the data can be very significant.

As an example, the subject of worker dislocation became a major concern of policymakers during the 1981-82 recession. In particular, as a result of language in the October 1982 Job Training and Partnership Act, the Employment and Training Administration of the Department of Labor requested that the Bureau of Labor Statistics identify the population of dislocated workers as well as their reason for dislocation, industry affiliation, and numerous demographic characteristics. However, because the dislocated worker concept was not currently identified by the monthly CPS, it was necessary for the Bureau to use a supplement to the CPS to gather the available information. The time costs of negotiating with the Census Bureau as to the timing of the supplement, creation and approval of the questionnaire, conducting the survey, processing and analyzing the data, resulted in a release of the first report on dislocated workers in November 1984.

Recommendation 1. Creation of a quick response household survey capability at the Bureau of Labor Statistics would add needed flexibility and timeliness to its ability to answer requests for data. Such a quick response survey would either use a random digit dialing method to create the sampling frame, supplemented by a purchase list for households without telephones or a list area frame which would also have uses for numerous other BLS programs. The organizational and budgetary structure would permit 2 surveys to be conducted a year at an annual cost of around $750,000 to $1 million dollars in 1988 dollars (all dollar estimates are given in 1988 dollars in this report). With the same amount levied for an initial appropriation, it would be possible to cover all startup costs and conduct one survey in the first year of operation.

II. Longitudinal Data Needs

Progress in the fields of labor economics, sociology, demography, and health economics, among others, has made significant advances owing to the development and availability of longitudinal data. As these data have developed, new approaches to empirical questions have come under the scrutiny of the social scientist. In particular, the perspective provided by cross-sectional data--stratified measures of the characteristics of the population at a point in time--are being reexamined with the ability to follow the experiences of individuals over extended periods of time.

One telling example is the estimation of the length of time individuals remain unemployed. Reliance on cross-sectional estimates produces biased measures owing in part to the fact that such data capture individuals while their unemployment is still in progress--without providing information on the eventual length of spells. Longitudinal data hold the promise of following individuals from the time they enter unemployment until the date they either find employment or withdraw from the labor force. As a result, analysts are better able to capture the effects of changing economic and institutional conditions, such as the impact of recessions or the provision of extended benefits on the length of time people remain unemployed.

The previous example is but one of many which could be chosen to demonstrate the value of longitudinal data. A brief and partial listing of other important topics includes:

- retirement decisions and the effect of changing pension and social security rules,
- long-term earnings and employment effects of education and training programs,
- fertility and child-bearing decisions, especially the problems of adolescent mothers,
- experiences of veterans and the relationship between military training and subsequent career decisions,
- impact of social welfare programs on welfare dependence, earnings independence, and family structure.

Before discussing specific sources of longitudinal data, it is useful to note some of the special problems these data often pose. One obvious one is the difficulty in tracking individuals over an extended period of time. The longer you attempt to follow a cohort, the higher is the non-response and the refusal rates. As a result, more resources have to be devoted to the survey and interviewers have to work harder to preserve the integrity of the survey. One particular problem in this regard is the need to follow individuals who move.

Finally, there is increasing concern about data linkages. As longitudinal data sources proliferate, it is important that any proposal to match individuals between different data files protect the privacy of the individual and preserve the trust of the individual respondent. If not, the integrity of entire surveys can be called into question.

A. The National Longitudinal Survey

One especially valuable source of longitudinal information is the National Longitudinal Survey (NLS) which for the last three years has operated under the direction of the Bureau of Labor Statistics and for the last twenty years has been administered by the Center for Human Resources at Ohio State. There are three currently active cohorts: Mature Women (aged 30-44 in 1967); Youth (aged 14-21 in 1979); and Young Women (aged 14-24 in 1968). Two cohorts were discontinued in the early 1980's because of budget constraints; Older Men (aged 49-59 in 1966); and Young Men (aged 14-24 in 1966).

During the last two years, the Bureau of Labor Statistics has reviewed the use of the NLS program, and as part of this review process issued a report on the future of the NLS released January 20, 1989. Among the recommendations made in the report, the Bureau has identified the following which are consistent with and speak directly to the broad mandate of the Commission:

Recommendation 2. The review of the NLS program has given strong priority to starting a new youth cohort. The data which has been collected to date from the cohort aged 14-21 in 1979 has proven extremely important in understanding the process of transition from adolescence to adulthood. The ability of agencies outside the Department of Labor to add supplementary sections to the core interview has been very cost effective, especially relative to the cost of mounting an independent survey effort.

The creation of a new youth cohort will permit examination of numerous issues identified as especially important by this Commission, including, but not limited to:

* the transition from school to work, including the problems of high school dropouts,

* the impact of training programs on the employment stability and wage profiles as individuals in the cohort progress into adulthood,

* the effect of various levels of educational attainment on labor market outcomes.

The cost of mounting a new survey effort is estimated to be about $4 million per year. A new youth cohort should be interviewed yearly for the first ten years, and then placed on a bi-annual interview schedule.

One of the problems affecting many longitudinal surveys, especially the NLS, is the effect of budget constraints on the ability to continue a consistent schedule of reinterviews for each cohort. At the same time, one of the possible benefits of a stringent budgetary climate is the elimination of unnecessary duplication of effort across surveys.

However, the general funding situation for the NLS has been so tight in the last few years that the BLS faces and has already made tough choices between highly valued aspects of the survey. For example, one important aspect of any survey, data accessibility, has not been developed to its potential owing to a general lack of funds. As a consequence, the integration of the survey into the highly valued system of preparing data analysis for the public and for policymakers has not been accomplished. Instead, certain budget choices, such as putting the 1979 youth cohort on a bi-annual interview basis, are being considered to free up resources to permit continuation of other cohort interview schedules.

Recommendation 3. We recommend an appropriation of $200,000 a year for the purpose of integrating the richness of the NLS data base into the ongoing functions of the Bureau. These monies will pay for the added personnel and computer resources needed for this effort.

B. The Current Population Survey

Although a cross-sectional survey by design, the Current Population Survey offers a rich source of hitherto underutilized longitudinal data. The survey which is conducted by the Bureau of the Census under contract to the BLS, is based on a sampling frame of household addresses drawn from the Decennial Census. A household agreeing to participate in the survey will be interviewed for four consecutive months, remain out of the survey for the next eight months, and be subsequently interviewed for another four periods. As a result, it is possible to systematically construct numerous longitudinal profiles across the eight possible months of information gathered on the individuals in each household. Although such matches are done on an ad hoc basis in response to requests from data users, budget constraints have prevented taking a systematic and integrated processing approach.

Recommendation 4. We recommend the construction of data tapes which contain the matched records of individuals using existing cross-sectional files. If this is done, an entirely new source of longitudinal information on the labor market behavior of individuals would be constructed entirely from existing information. The main costs will be computer processing and data verification expenses which, given the technical expertise of the Bureau, promises to be cost effective.

Another data set that can be derived from CPS cross-sectional files are the set of month-to-month transitions of individuals between employment, unemployment, and being outside the labor force--often referred to as Gross Flow data. By matching individuals between two consecutive survey periods, it is possible to identify the flows occurring between these labor market states. Given its national representativeness and the richness of demographic detail on individuals, researchers have long sought to exploit the potential of this data base. However, a problem exists in the data which, until resolved, prevents the realization of this potential.

As an illustration of the problem, consider the measurement of a change in the level of employment between two consecutive survey periods. By design, this change should equal the level of employment in the first month adjusted positively for the flows into employment and negatively for the flows out of employment during the month between the survey dates. That this simple accounting scheme is not satisfied is a problem that has prevented more proactive use of these data. There are, however, promising statistical avenues which can be pursued for increasing the reliability of these data.

Recommendation 5. Resources should be provided for the development of methodologies to correct the biases inherent in the Gross Flow data with the eventual goal of the release and general availability of these data.

One feature of the Current Population Survey which distinguishes it from other surveys is its sampling frequency. By matching the monthly responses of individuals during their time in the survey, one can build a longitudinal profile that is relatively less prone to recall error than surveys with reinterviews that take place every 4 months, or each year, or even every two years. This unique feature of the survey permits a greater precision in describing the month to month activity of respondents. The drawback of the survey's design in this regard is that individuals are in the survey for a maximum of four consecutive months. However, given that the structure for drawing the sampling frame is already in place, it is possible to enlarge the sample at costs which are much lower than beginning a new survey. Accordingly, it is economically feasible to create a new longitudinal sample using the monthly CPS sampling universe and sampling frame.

Recommendation 6. Resources should be provided for the creation of panel of households which would be interviewed over a long-term basis using the monthly CPS survey instrument. One critical feature of this survey which is not part of the current sample design of the CPS, is the need to follow individuals in the sample who move out of the household being surveyed.

C. Retirement History Survey

In May 1988 the Ad Hoc Advisory Panel to the Behavioral and Social Research Program of the National Institute on Aging (NIA) issued a set of recommendations on priorities for data collection in Health and Retirement Economics. The report concludes:

> "...available datasets pertinent to health and retirement economics are widely perceived to be inadequate to address current and future concerns about the aged."[1]

There are numerous areas of policy which, in the opinion of the Panel, can benefit from quality sources of data on aging. One of the most cost effective benefits would be the ability to inform policy on health expenditures--especially Medicare and Medicaid; labor force participation and retirement decisions of the elderly; housing and living arrangements--especially their relationship to long-term care; and the general financial status of the elderly.

The key to understanding the issues underlying the development of data on the elderly centers on the relationship between two alternative proposals which emerged from the Panel's report. The first is the development of a new Retirement History Survey. This option is based in part on the premise that "a wholly new data collection effort would not have to make concessions to history and could get it right the first time."[2]

The second proposal is to add question modules to existing longitudinal surveys to reflect the interests and needs of the community conducting research on aging. The Panel purposefully left this option open, relegating the details of its technical feasibility to a chapter discussing each of the relevant existing data bases. A reading of the Panel's report indicates that the most favored candidate for inclusion in this strategy is the National Longitudinal Survey (NLS). However, no specific recommendations were made.

One additional complication to the current deliberations is the impact of Title 13 privacy regulations. The Census Bureau is in the early stages of planning a new retirement history survey. The Panel offers the opinion that "an integral part of any data collection strategy is that the resulting data be easily and widely available to the research community."[3] The Panel report goes on to conclude, "It would behoove the NIA to await an official Census Bureau policy on access before funding any data gathering that would fall under Title 13 regulations."[4] This effectively eliminates from current consideration both the Census retirement survey effort as well as a reinterview of the Title 13 governed original retirement history survey.

Recommendation Options. What conclusions can be reached from these deliberations? First, we concur with the Panel's report on the importance of continued support for data collection on issues of aging. Second, one course is to recommend support for the Panel's second option, supplementing the National Longitudinal Survey with question modules designed to capture needed information on aging. There are two directions this recommendation could take--either supplementing the Mature Women's Cohort (aged 30-44 in 1967), or reinterviewing the Older Men's cohort (aged 45-59 in 1966).

A bolder recommendation is to offer support for the Panel's first option, a new retirement history survey. If the Commission decides to move in this direction, the Commission should be cautious about one additional option the National Institute on Aging is considering; namely, the option of using existing sampling frames from the National Health Interview Survey (NHIS) or the Panel Survey of Income Dynamics (PSID) to develop the new retirement history sample. In particular, there are some significant concerns that using an existing sampling of individuals to form the basis for a new survey would violate the spirit of trust between the data provider and the individuals in the survey and, as a result, threaten the integrity of the effort.

III. Measurement of Labor Turnover and Labor Shortages

As surprising it may seem to some, there does not currently exist direct and accurate measures of either job vacancies or labor turnover in the United States. With regard to the former, then Secretary of Labor Ann McLaughlin made the observation that:

> "The Bureau of Labor Statistics has examined available measures of labor shortages--by industry, occupation, and geographic area. Each of these measures is indirect...Unfortunately, the current labor market information system contains neither data on job vacancies nor data about the time it takes employers to fill specific jobs...Also useful would be a direct measure of new hires in order to better analyze job vacancy data with respect to labor shortages."[5]

Information on job vacancies could provide needed measures of how demand for labor changes with the business cycle and with the relative tightness of local labor markets. Such information would be invaluable to researchers. As well, policymakers could benefit from the ability to identify geographical, industrial, and occupational areas in which there are shortages of workers. Such information may help determine areas in which we are experiencing a growing skills gap; it may also help to carry out the requirements of the Job Training Partnership Act (JTPA) program, and labor certification of aliens, to name a few.

The measurement of job vacancies is an attempt to capture the dynamic nature of labor markets. Vacancies are, however, but one important aspect of these dynamics. The other is the concept of labor turnover. Each month the CPS produces measures of the levels of employment and unemployment as well as the number of individuals not in the labor force. From one survey month to the next, the level of unemployment changes due to additions to the unemployment pool in the form of quits, layoffs, fires, retirement and death, and deletions from unemployment in the form of withdrawals from the labor force, new hires and rehires. The flows that are responsible for the changes in the stock levels of employment can be sizeable and very responsive to changing business cycle conditions.

For example, in January 1980, the peak month of the 1975-1980 economic recovery, the level of unemployment stood at 6.8 million individuals. Underlying this change in the stock level of unemployment, however, was a highly dynamic process. Using Gross Flow data from the CPS, an estimated 49 percent of these individuals left unemployment by the next month. As well, between the January and February surveys, 3.1 million new individuals became unemployed, representing 46 percent of the January unemployment level.

These numbers only reflect the overall levels of additions and deletions. Currently there does not exist a source of data on the individual components of labor turnover in the U.S. economy. Many may recall the labor turnover series which was discontinued as a result of budget cuts in 1982. Although informative, those data were only representative of labor force movements in and out of the manufacturing sector. Given the substantial shifts which have occurred in the recent years between manufacturing and the service sector, it is imperative that labor turnover information be representative of all industries.

As well, some may recall a short-lived vacancy series which ran between 1969 and 1972, also limited to the manufacturing sector. Since the discontinuation of both series, the processing environment for conducting establishment surveys has improved tremendously, resulting in more efficient data transmittal mechanisms (especially through computer assisted telephone interviews and voice recognition mediums), substantially smaller response burdens on the part of firms, and generally more reliable data. However, it is paramount that any effort to measure job vacancies and labor turnover be done carefully and thoroughly from both a cost perspective as well as reflecting concern for data quality and respondent burden.

Recommendation 7. We recommend conducting a single pilot establishment survey which will permit separate judgement as to the efficacy of measuring job vacancies and the components of labor turnover. There are numerous cost savings to using a single pilot to evaluate two potential programs--but such a recommendation is not meant to imply that a vacancy series and a turnover series must co-exist.

In addition to measuring the levels of vacancies and the various types of labor turnover, this pilot would also examine the efficacy of collecting information on the occupational categories and geographical location of vacancies; the posted wage rates associated with vacant positions; and study the respondent burden of providing wage information on new hires. The cost of setting up and conducting a pilot survey is estimated to be $350,000.

IV. Data from the Records of Establishments

There is a growing perception that in their current form, establishment data are not being used to their full potential, and there are significant gaps in our information on firms not being filled by existing surveys. One example has already been touched upon in this paper, the need for data on job vacancies, new hires and sources of labor turnover.

The recommendations given in this section and the sections that follow outline the need for systematic research on the types of information collected from firms. Although the case for collecting more data from establishments is a compelling one, we recommend that a cautious approach be taken. One reason for this position is the need to protect the confidentiality of firms. The continuing call for very detailed information on firms has to be balanced against the need to protect the identity of firms in the data base. Moreover, since much existing data on firms is collected through the system of State Employment Security Agencies, any effort to create national data bases from their files must respect the integrity and autonomy of these organizations.

One particular example reflecting these concerns is the idea of creating a national archive of the wage records firms provide to State agencies under the Unemployment Insurance (UI) system. Combining these data into a national data base offers the potential of a rich new source of information but it also raises the issues of data confidentiality and the need to carefully structure cooperation between State agencies. It is by no means clear that an effort to combine and archive state UI records would be successful, but the potential such a data set represents suggests that a carefully designed pilot study be constructed.

Through the auspices of the U.S. Department of Labor, the Northeast-Midwest Institute prepared a report released on January 10, 1989 which examined the feasibility and desirability of creating a longitudinal data set based on wage records collected for the administration of the Unemployment Insurance System. The report concluded that owing to the extensive coverage of the reporting system (nearly 97 percent of total employment), near uniformity of reporting practices across states, and rapid advances in computer technology, the creation of a longitudinal data set of individual wage records using establishment data reported by firms under the UI system is technically feasible and economical.

The desirability of such a data set can be demonstrated on several grounds. In particular, there are two significant constituencies of users: academic researchers and policymakers. On the research side, examples of issues include:

1. A greater understanding of the mobility patterns of workers in terms of industrial affiliation and geographic location.

2. The need for information characterizing the adjustment of immigrants to labor market.

Besides the benefit to the research community, nationally archived UI data would be an invaluable tool in the evaluation of Federal and State expenditure programs. In general, the impact of programs in terms of their employment, earnings, and worker dislocation effects could be examined. More specifically, a nationally archived UI data base offers a reliable source of information for the evaluation and the establishment of performance standards for government programs such as JTPA.

Already, a number of states have begun using UI claimant data to facilitate their evaluation studies of the JTPA program. A national longitudinal data base would improve this capability, especially in terms of following individuals who move across state boundaries after receiving training. Moreover, the identification and measurement of the earnings of proper control groups is found to be much more reliable, less expensive and less prone to statistical problems--such as selection bias--than conventional methods which rely on household data.

There are numerous other programs where evaluation is based in part on labor market indicators such as employment stability and earnings profiles, and as a result, evaluation efforts could benefit substantially from a longitudinal UI data base. For example, in the area of income maintenance programs, by matching longitudinal UI records to welfare caseload files, the success of trying to reduce welfare dependency could be examined.

Recommendation 8. Resources should be provided for the setup of a pilot project to systematically investigate the possibility of constructing an archive of UI wage records. The project should be conducted on a regional basis, and besides investigating the costs of creating such a data base, careful consideration should be given to issues of confidentiality and preservation of the integrity of State Employment Service programs.

V. The Feasibility and Desirability of Surveys which Match Workers and Firms

During the first meeting of the Commissioners on September 19, 1988, Commissioner Gary Becker decried the lack of reliable data on the nature and extent of training which takes place in firms--or sponsored by firms. In attempting to address Commissioner Becker's request that the reasons for such a lack of data be examined, one is immediately struck at the difficulty of the task.

Using the experience of previous attempts to measure training as a guide, one finds most surveys have significant weaknesses in their overall concept and design. First, household surveys suffer from the drawback that respondents often do not know the funding auspices under which they received their training, how many individuals are trained each year, the success rate, and so on.

The strength of household surveys is that they do allow researchers to get the respondent's description of his or her previous training as well as the nature of the most recent training episode. Such baseline information is useful in evaluating the extent to which the current training has been effective. A problem in this regard is that most household surveys have been cross-sectional, and although some retrospective information is collected, there have been few attempts to collect longitudinal profiles of the effectiveness of training over an extended period of time. The one significant exception are the training questions asked in the National Longitudinal Survey. These questions are probably the best source of information on training available.

Second, an establishment survey designed to collect data on the provision of training would not by itself be very informative. Firms can provide information on the nature and number of formal training opportunities offered to workers--but information on the characteristics, abilities and reactions of the participants would probably be lacking.

An obvious approach would be to use a combined household and establishment survey approach. One immediate question is whether or not the survey should be conducted as a random sample of establishments, followed by a random selection of workers in the establishment--or should the survey be conducted as a random survey of individuals with follow-up contacts of firms.

The proper sampling frame is a question for which no well-defined answer currently exists, pointing to the need for research. However, in considering the overall idea of matching workers and firms, one begins to see the potential for analysis of areas beyond the examination of training issues. In particular, there is a growing call for data which relates organizational aspects of the firm to information on the characteristics of workers. In a 1986 report entitled "America at Work: National Surveys of Employees and Employers," the Social Science Research Council reported to the Department of Labor:

> "There is, however, a set of issues that escapes attention in (labor market) surveys (or is at best marginally treated): the impacts of different organizational conditions of work on worker productivity, worker well-being and satisfaction, labor force

> behaviors such absenteeism and quitting work, and labor-management and industrial relations."[6]

One of the principle pieces of information needed to evaluate worker/firm surveys are their cost. In addition, there are also considerations of confidentiality as there are with any survey design. However, given the potential this approach represents, it seems desirable to devote resources to a systematic study of these questions.

Recommendation 9. Resources should be provided for the study of the efficacy of conducting surveys which match both workers and firms. Given its experience with both household and establishment surveys, the Bureau of Labor Statistics should be given responsibility for studying this issue.

The Bureau already has a universe file set up for drawing a sampling frame of establishments. Moreover, BLS experience with establishment data would permit a careful study of the issues of cost and confidentiality requirements associated with a study which matches firm and worker data. Another natural starting point is to use the National Longitudinal Survey to examine the viability of starting with a household based survey and collecting information from firms, especially with respect to training.

V. Communication on Labor Market Data Issues

Progress in the world of data collection and dissemination has been substantial in the last twenty or so years. This progress comes from both technical advances in the pure quality of the data as well as in the usefulness of data to policymakers, researchers and the general community of data users. Indeed much of the focus of the recommendations thus far has been on ways to improve on what are generally perceived as highly valued sources of information.

In attempting to review data needs for labor market analysis it is useful to keep in mind the following three important observations: First, the worlds of both data providers and users are large and extremely diverse. Second, despite this diversity there are a number of issues which reflect a commonality of interest between these diverse groups. Third, in general, both data providers and data users have established effective formal mechanisms of soliciting advice and opinions from the world of data users. Examples include the Advisory Committees of the Bureau of the Census, the Council of Professional Association of Federal Statistics (COPAFS), the Association for Public Data Users (APDU), and the Bureau of Labor Statistic's Labor Research Advisory Council (LRAC), and Business Research Advisory Council (BRAC). Sometimes, the advice is informal, depending on the nature of relationships established between the data provider and the entire data user community.

In conducting this overview of data needs for labor market analysis it also became apparent that there are significant umbrella issues of particular relevance to a wide spectrum of data users and providers. For example, one topic which has emerged as very important in our discussion of data needs are proposals to improve the accessibility and close the information gaps in establishment data. Another are issues relating to the development, quality, and coverage of longitudinal data bases. A third are general issues relating to confidentiality, statistical measures of data quality, and appropriateness of survey measures of theoretical concepts. A fourth are issues related to the integration of advances in computer technology into the way in which data are released.

The opportunities for diverse interests to come together and discuss these topics of mutual interest are somewhat limited. Even though professional meetings such as the Annual Research Conference at the Bureau of the Census are of significant value, they do not necessarily reflect broader issues related to labor market data. What is needed is a flexible structure in which the participants and the aspect of labor market data being considered can change from one meeting to the next.

Recommendation 10. Resources should be provided to set up an annual conference of data providers and data users. By design these conferences should be organized around a single theme each year, and the participants of the conference should reflect this design. To achieve continuity, the conference should be sponsored by and organized under the auspices of the Department of Labor. The invitees should be drawn from the various constituencies of data providers and users relevant to the discussion.

NOTES

1. Report of the Ad Hoc Advisory Panel to the Behavioral and Social Research Program. *National Institute on Aging Recommendations to the NIA Extramural Program on Priorities for Data Collection in Health and Retirement Economics* (May 1988): p. iii.

2. ibid, p. vi.

3. ibid, p. vii.

4. ibid, p. vii.

5. Report of the Secretary of Labor, *Labor Market Shortages* U.S. Department of Labor (January 1989): p. 20.

6. Report of the Social Science Research Council Advisory Group on a 1986 Quality of Employment Survey. *America at Work: National Surveys of Employees and Employers* (April 14, 1986): p. 7.

REFERENCES

Bishop, John. "Policy Evaluation with Archived Wage Record Data: Limitations of Existing Data Sets." *Invitational Meeting of the Northeast-Midwest Institute* (January 10, 1989): 13-24.

Bishop, John. "The Recognition and Reward of Employee Performance." *Journal of Labor Economics* vol. 5, no. 4, pt 2: S36-S56.

Bulletin 2285. *Handbook of Methods of the Bureau of Labor Statistics* U.S. Department of Labor, Bureau of Labor Statistics. (April 1988).

Bulletin 2310. *Permanent Mass Layoffs and Plant Closings, 1987* U.S. Department of Labor, Bureau of Labor Statistics (July 1988).

Cohen, Malcolm. "Developing a Wage Record Data Archive: Some Implementation Issues." *Invitational Meeting of the Northeast-Midwest Institute* (January 10, 1989): 35-43.

Davis, Steve J. and Haltiwanger, John. "Gross Job Creation, Gross Job Destruction and Employment Reallocation." *Preliminary Draft for presentation at the 1988 Econometrics Meetings*, (December 28-30).

Duggan, Paula. *Labor Market Information: Book I, A State Policymaker's Guide* Northeast-Midwest Institute: The Center for Regional Policy (1988).

Employment Service-202 Operating Manual (Part III., Sections 0400-0599, Employment Wages and Contributions) U.S. Department of Labor, Bureau of Labor Statistics

Hamermesh, Daniel S. "Data Difficulties in Labor Economics." *Fifty Years of Economic Measurement*, Ernst Berndt, Erwin Diewert and Jack Triplett (editors), University of Chicago Press, (1989), forthcoming.

Hanna, James. "The State Perspective on a National Wage Record Database." *Invitational Meeting of the Northeast-Midwest Institute* (January 10, 1989): 25-34.

Jacobson, Louis and Thies, Carolyn. "Updating the Pennsylvania 5-Percent Work-Claim History File to Cover 1969-85." *Final Report to the Bureau of International Labor* U.S. Department of Labor (August 1, 1988).

King, Christopher. "Employment and Earnings Dynamics in the 1990's: Policy Issues and Potential Uses of National-Archived UI Wage Records." *Invitational Meeting of the Northeast-Midwest Institute* (January 10, 1989): 1-12.

McGuckin, Robert H. and Pascoe, George A., Jr. "The Longitudinal Research Database (LRD): Status and Research Possibilities." *Discussion*

Paper CES 88-2 Center for Economic Studies, Room 3442, FOB 3, U.S. Bureau of the Census, Washington, D.C. 20233. (July 1988).

National Commission Employment Unemployment Statistics. *Counting the Labor Force.* Appendix Volume II. (Labor Day, 1979).

National Commission Employment Unemployment Statistics. *Data Collection, Processing and Presentation: National and Local, Appendix, Volume II to Counting the Labor Force.* Appendix Volume II. (Labor Day, 1979).

Organization for Economic Co-operation and Development. "Chapter IV: The Process of Job Creation and Job Destruction." *Draft Report, Working Party on Employment* (April 29, 1987).

Report 718. *Major Programs of the Bureau of Labor Statistics* U.S. Department of Labor, Bureau of Labor Statistics (April 1985).

Report from the National Science Foundation Conference on the Future of the National Longitudinal Survey and the National Longitudinal Survey Technical Review Committee. *The Future of the National Longitudinal Survey.* Center for Human Resource Research at the Ohio State University. (January 20, 1989).

Report of the Ad Hoc Advisory Panel to the Behavioral and Social Research Program, National Institute on Aging. *Recommendations to the NIA Extramural Program on Priorities for Data Collection in Health and Retirement Economics* (May 1988).

Report of the Secretary of Labor. *Labor Market Shortages.* U.S. Department of Labor (January 1989).

Report of the Social Science Research Council Advisory Group on a 1986 Quality of Employment Survey. *America at Work: National Surveys of Employees and Employers* (April 14, 1986).

Stevens, David W. and Duggan, Paula. *Labor Market Information: Book II, An Agenda for Congress* Northeast-Midwest Institute: The Center for Regional Policy (1988).

User's Guide to Labor Force Statistics from the Bureau of Labor Statistics U.S. Department of Labor, Bureau of Labor Statistics, Office of Employment and Unemployment Statistics (1985).

Utter, Carol M. "Labor turnover in manufacturing: the survey in retrospect." *Monthly Labor Review* (June 1982): 15-17.

Waite, Linda J. "Sociologists' Need for Longitudinal Data: The NLS Cohorts" *Presented at the National Science Foundation Conference on the National Longitudinal Surveys*, Washington, D.C., (October 21, 1988).